Disasters, Continuity, and IT

Keeping your business afloat during the storm.

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01: Introduction

Cocoa-Sassafras Corporation (CSC) background and future initiatives.

Business Continuity and Disaster Recovery

Cocoa-Sassafras Corporation (CSC) is a US-based food and beverage company with manufacturing, distribution, and data centers in the US, Canada, and Mexico. CSC recently acquired Snack World, Inc. (SW) two years ago, and reported $3 billion in revenue last year.

CSC has experienced interruptions to business operations associated with previous natural disasters and is eager to prepare for future risks. CSC's leadership conducted a Business Continuity Plan (BCP) and Disaster Recovery (DR) Plan three years ago, however the business leaders are seeking to integrate a new plan for both current and future concerns.

The program lifecycle shown in figure 1 has been established to guide the leadership of CSC into the future. As part of this initiative, the BCP leadership team will focus on the Planning, as well as Assess & Validate stages toward future implementations.

Figure 1: CSC's BC-DR Program Lifecycle Plan

References:

https://docs.intersystems.com/irislatest/csp/docbook/DocBook.UI.Page.cls?KEY=GHA_mirror_set_comm_network_dual

https://www.thorntech.com/2017/05/cloud-disaster-recovery/

02: Risks

What's coming? Considering natural, human, and environmental risks.

Disasters

Disasters come in many forms, and may include:

Natural disasters, Accidents, Sabotage, Power & Energy Disruption, Communications/Transport/Security failures, Terrorist attacks, Pandemics, Environmental Disasters, Pollution, Hazardous Material Spills, Cyberattacks and Hacker activity.

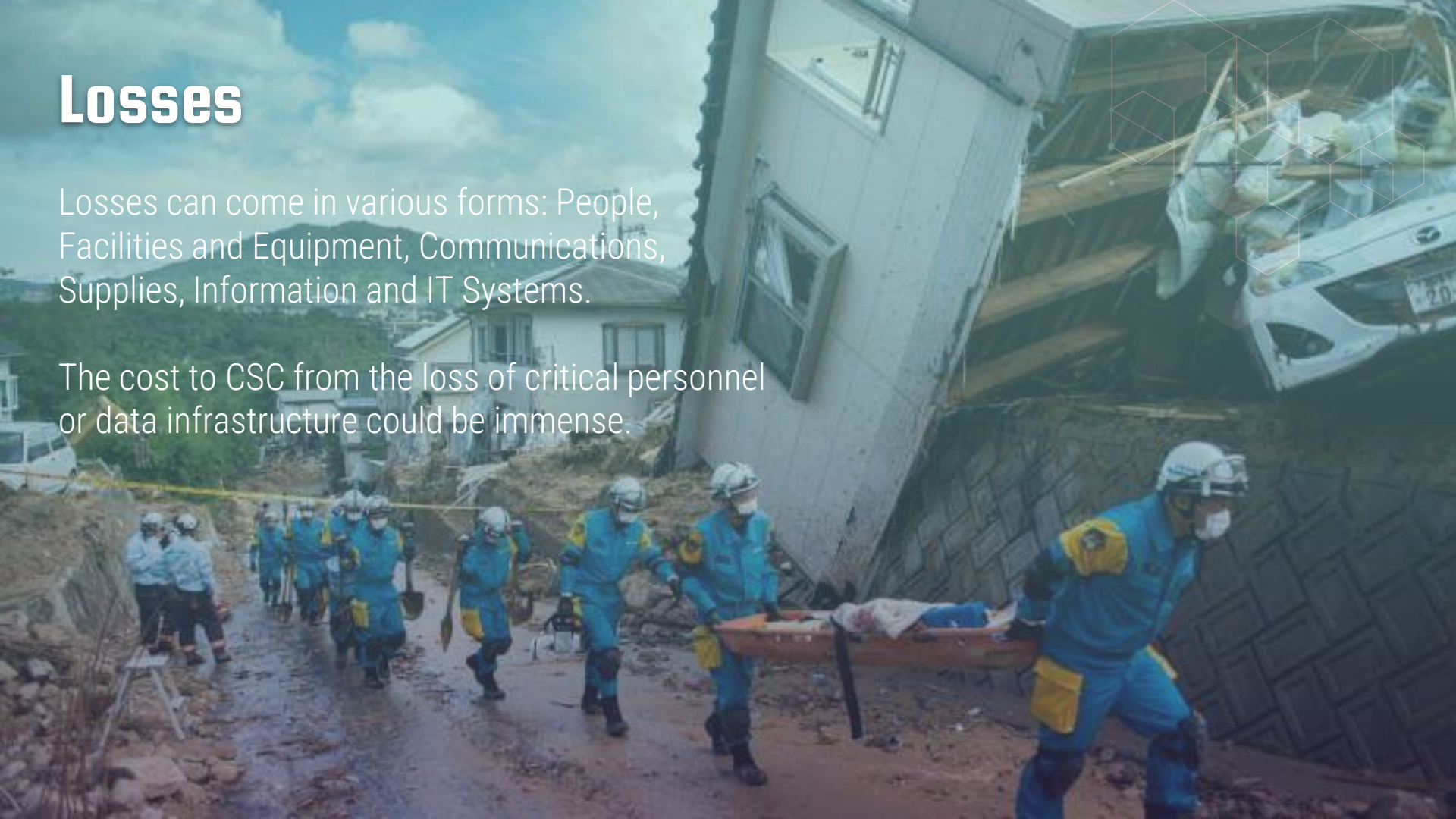
Hurricane Sandy

Sandy was one of the top five most destructive hurricanes that hit the United States. This hurricane significantly affected CSC's major distribution and data centers in the north east, prompting CSC to re-evaluate its Business Continuity (BC) and Disaster Recovery (DR) preparedness business-wide.

Losses

Losses can come in various forms: People, Facilities and Equipment, Communications, Supplies, Information and IT Systems.

The cost to CSC from the loss of critical personnel or data infrastructure could be immense.



CSC's Particular IT Vulnerabilities

CSC currently has two data centers, (1) in Illinois, and (2) in Philadelphia. They have a myriad of issues:

I. Philadelphia, the site most recently struck by Hurricane Sandy, is the primary recovery site for the Illinois Data Center, but not vice versa. **"no plan in place to be able to recover the JD Edwards ERP system."** Migration from one ERP system to another will take at least 1 year.
II. The maximum acceptable recovery time for the SAP system is 14 days, **but no testing has been done**. We have no idea how long it will take.
III. Two ERP systems are currently in use. CSC uses SAP, and SW uses JD Edwards.
IV. Resiliency is a major concern for the business continuity of CSC.

03: Costs

The financial impact associated with protecting critical business systems.

Categories of Cost

The Costs of a disaster are manifold, and fall into the following general categories.

I. **Enterprise Resource Planning (ERP) Software down time.**
II. Legal ramifications of contract breaches.
III. Damage to Brand Image.
IV. Personal injury liabilities to Personnel.
V. Clearing, Repairing, Replacing, Refitting, and Reinstalling equipment and facilities.

A previous BIA identified *procurement, manufacturing, and distribution process* as the primary source of revenue and therefore most vulnerable section of CSC. The following cost analysis will focus on IT in this specific context.

ERP Downtime calculations

Based on outdated BIA, 5 days without SAP would result in a 10% loss in revenue.

Net sales for the current year is $4,135,801,000. (Probably high due to merger)

Net sales for last year was $2,853,238,000. (approx. 300 million loss)

Net sales for 2 years ago was $2,690,361,000. (approx. 250 million loss)

Considering the yearly income hovers around 100 million, a five day downtime would wipe out multiple years worth of income.

Obviously, this necessitates a hot alternate facilities that can handle simultaneous transfers of load from sister facilities, or another creative solution.

04: Contingency Planning & the New Business Impact Assessment

Developing a comprehensive and sustainable plan built upon dependable framework.

Business Continuity & Disaster Recovery Program Lifecycle

Each of our projects fits into CSC's BC-DR Program Lifecycle:

1. Plan
2. Assess & Validate
3. Design
4. Implement
5. Exercise; and
6. Maintain

Business Impact Analysis (BIA) Approach

As part of the Assess and Validate stage of CSC's BC-DR Program Lifecycle, the leadership team is seeking to utilize the **NIST 800-34r1 Contingency Planning Guide for Information Technology Systems**.

This framework addresses the concerns for CSC's mission and business processes, while focused on the Confidentiality, Integrity, and Availability of organizational assets and systems.

The seven steps within NIST's Contingency Planning Process framework include:

1. Develop the contingency planning policy;
2. **Conduct the Business Impact Analysis (BIA)**
3. Identify preventive controls;
4. Create contingency strategies;
5. Develop an information system contingency plan;
6. Ensure plan testing, training, and exercises; and
7. Ensure plan maintenance.

Within the BIA phase, the **three critical steps** to accomplish the BIA include: 1) Determine mission/business process and recovery criticality; 2) Identify resource requirements; and 3) Identify recovery priorities for system resources.

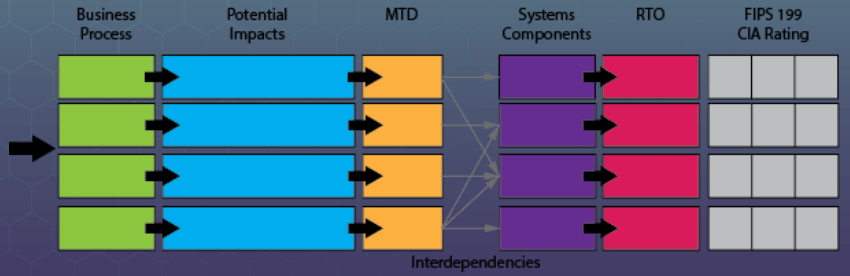
Business Impact Analysis (BIA) Methodology

CSC's BIA Leadership team is seeking to obtain input from key stakeholders and collect quantifiable data to inform decision-making processes. This information will help CSC identify and prioritize business risks in alignment with the impact on processes if these systems were unavailable.

Rating factors include:

- Determine criticality of systems
  - E.g., the maximum outage tolerance for each system
    - Include outage impacts (Severe/Moderate/Minimal)
    - Determine downtime expectations (Maximum Tolerable Downtime (MTD), Recovery Time Objective (RTO), and Recovery Point Objectives (RPO))
  - Determine costs for downtime

Resource: NIST SP800-34r1 (3.2 & Appendix B)



BIA Costs

The CSC business continuity plan provides the ability to avoid a potential infrastructure failure, which can cost USD $100,000 an hour and a critical application failure can cost USD $500,000 to USD $1 million per hour.

CSC has invested nearly $350,000 to conduct the BIA, allocating financial resources to the leadership team, management and project managers from each manufacturing facility and distribution center. CSC is anticipating approximately three months to conduct the BIA, with various amounts of participation from team members.

This is a small price to pay for business continuity!

Internal Cost to CSC to Conduct the BIA

Title	People	Annual Salary	Hourly Rate	Duration (hours)	Total Hours	Total Cost
Executive	3	300000	144	120	360	$51,923.08
Managers MF	3	200000	96	80	240	$23,076.92
PM MF	3	120000	58	100	300	$17,307.69
Managers DC	19	200000	96	80	1520	$146,153.85
PM DC	19	120000	58	100	1900	$109,615.38
					4320	**$348,076.92**

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https://www.ibm.com/services/business-continuity/plan

https://www.continuitycompliance.org/tools-resources/community-projects/business-impact-analysis/estimating-the-cost-of-a-business-impact-analysis/ *(For the calculation of the cost of the BIA)*

https://www.accountingweb.com/practice/practice-excellence/survey-public-and-private-company-audit-fees-went-up-in-2013 *(For the typical hours to audit a private company)*

05: The BIA Team

The CSC BIA leadership team steps into action.

CSC'S BCP TEAM

The key stakeholders within CSC that will be involved with the BCP include:

- **John Smalling, Chief Risk Officer**
  - Responsible for the overall direction, decision-making, and approvals
- **Katie Pena, Business Continuity Director**
  - Responsible for activating the BCP and providing emergency notification
- **James Miller, Disaster Recovery Manager**
  - Responsible for assessing the damage and coordinating salvage options
- **Managers from Manufacturing Plants**
  - Responsible for faculty and the security of the sites
- **Divisional Management from Distribution Center Regions**
  - Responsible for overseeing delivery to and from sites

OUR TEAM


BCP Leadership
John Smalling
Chief Risk Officer
James Miller
Disaster Recovery Manager
Katie Pena
Business Continuity Director


Manufacturing Plants
Distribution Facilities
Distribution Facilities
Manufacturing Plants
Distribution Facilities
Distribution Facilities
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Distribution Facilities

06: IT Projects

Solutions.

Mirroring, Mutual Recovery, & Integrating ERPs

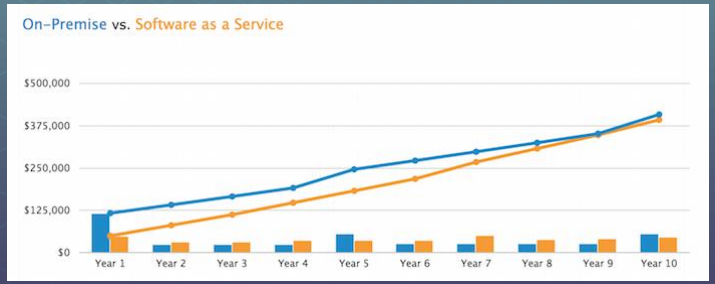
- Continue the plan to integrate the data centers and move toward one ERP while beginning a phased process of migrating from on-premise to hybrid cloud based options
  - Implementing a new ERP can cost up to $10m plus annual costs for maintenance and upgrades which are included in Cloud platform costs (Better Buys)
  - Cloud costs range and can be a flat rate or a rate per user (e.g., Lilly works is $100 per user per month versus $12,149 per month for all of the features included in the SAP from SAP Cloud Platform store)
  - Assessment and migration of the current SAP and ERP will take 12 months to complete, moving toward a Cloud solution save time and provide more stability sooner, with some features spinning up instantly

- Migration to the hybrid approach should be incremental anyway and hybrid provides stability, cost savings, and scalability increases while also allowing more flexibility and power over data
  - Savings for moving ERP to the cloud may eventually converge

- Easy to set up in the cloud
  - Less hardware & any further mergers could be more seamlessly handled

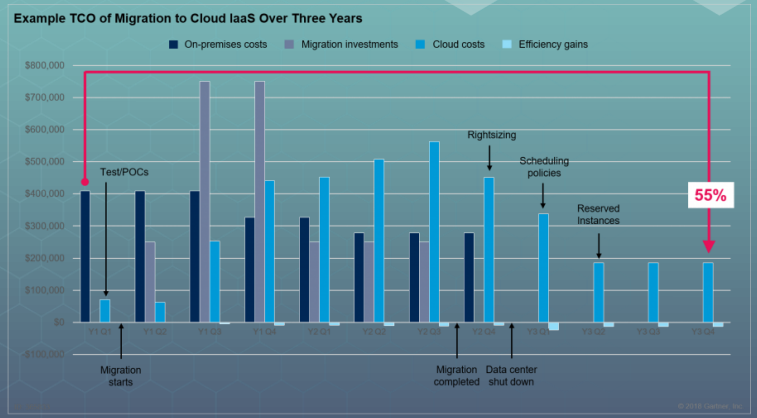
- Interoperability and access of ERPs within the cloud

- Make sure you: TEST TEST TEST



Increasing Resiliency: Cloud benefits

- Eventually move to Cloud web server failover approach in real time
- Cost-effective - economy of scale, externally managed, low maintenance overhead
  - After three years there may be a 55% cost savings by moving to cloud (Gartner)
  - With average costs of running a typical data center being $18.5m (US Chamber of Commerce), this could save $8.325m annually
- Fault tolerance
  - Up to 94% application downtime reduction (AWS)
- Scalable
  - Grows with the business instantly and without additional costs for hardware and support
- No Colocation Issues - no sharing of physical space with the server and no costs for the space the data centers will use
- Availability zones
  - run critical applications with higher availability and fault tolerance to data center failures



07: Quick Recap of Costs and Benefits

For your cost benefit analysis.

1. **BIA**

Costs $ 350 thousand.

Benefit: Updates information and increases accuracy of measurements.

2. **Mirroring Project**

Costs 10 million one time.

Benefit: decreases likelihood of possible 300 million dollar loss.

3. **Cloud**

Saves 8.325 million annually.

Benefit: decreases likelihood of possible 300 million dollar loss.

08: Conclusion

Wrapping up.

The Bottomline

- Our solutions provide a way to assess the human, natural, and environmental risks and seek to maintain CSC's objectives
  - Keep employees safe
  - Keeping CSC products available and on the shelf
  - Keep critical supplier, employee and client data secure
- The BIA utilizes NIST 800-34r1 Contingency Planning Guide for Information Technology Systems
- We suggest to integrate the data centers and adapt to one ERP
  - Phased process of migrating from on-premise to hybrid cloud based options
- The cloud offers cost-effective benefits with low maintenance overhead
- Implementation to be complete within 12 months

In Summary

The three new projects outlined above will (1) give us a perfect view of the various impacts and vulnerabilities throughout the business by implementing a new BIA, (2) harden our existing data centers to make them mutually supporting superfortresses, and (3) move our systems to the cloud to further improve resiliency.

The current state of affairs is unacceptable, and expose the business to critical risk, allowing a single bad storm to potentially bankrupt CSC. The above BCM and DR projects will not only improve resiliency but save money, and make sure your business keeps on keeping on through the worst of the storms.

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