

# SharePoint Summit



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The Fairmont Royal York, Toronto

## The Essentials of SharePoint Disaster Recovery

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About

me

# aka



"How I got SharePoint chocolate  
in my DR peanut butter"

# About me

My background with disaster recovery (DR)

- started before I ever touched SharePoint
- began in the financial services & insurance industry

My background with SharePoint

- began in 2004 with SharePoint Portal Server 2003
- I switch between IT Pro and Developer hats

DR and SharePoint

- co-authored two SharePoint DR books
- regularly speak, blog, and "work" on DR topics

# About this talk: why?

Most DR presentations I've seen (and delivered myself) focus on "how to" technical concerns ...

How to implement backups

- How to establish high-availability
- 

Not enough has been done to discuss the choices and processes that go into DR planning

- aka, the "non-gearhead" stuff



# The prerequisites

This is a 100-level talk, so I don't assume much:

- you don't know much about DR (other than "it's a good idea for my organization")
- you are interested in the end-to-end DR process and more than just strictly technical concerns.

Don't take notes unless you really want to

- <http://SharePointInterface.com>

my blog



In the time we  
have ...





# The Agenda

- Discuss the "big picture"  
Analyze the DR process
- Explore how SharePoint  
and DR come together
-





"The Big Picture"



# "The Big Picture"



- many layers

# "The Big Picture"



- many layers
- you're probably going to cry as you peel them back



Disaster  
Recovery  
Plan

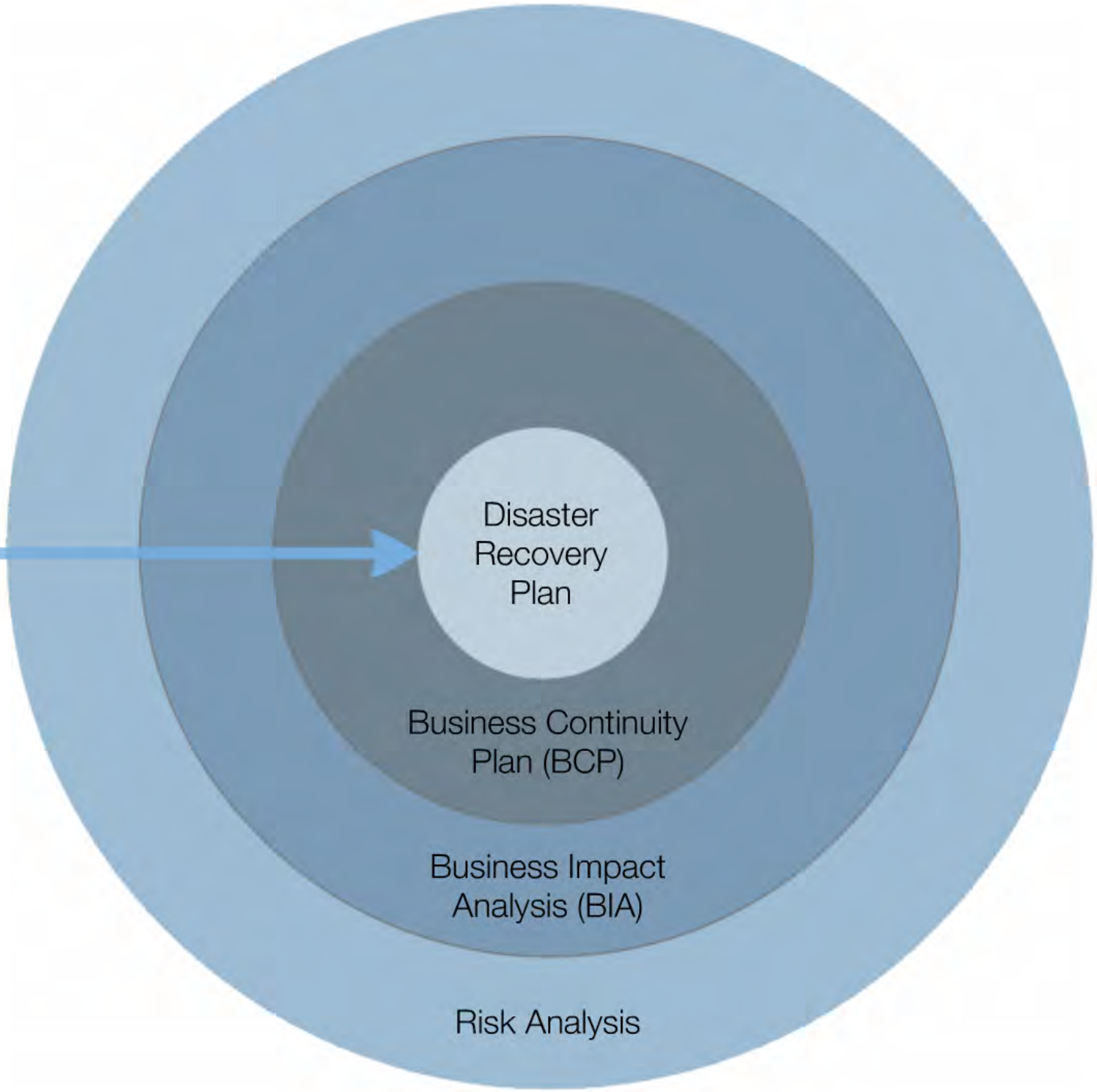


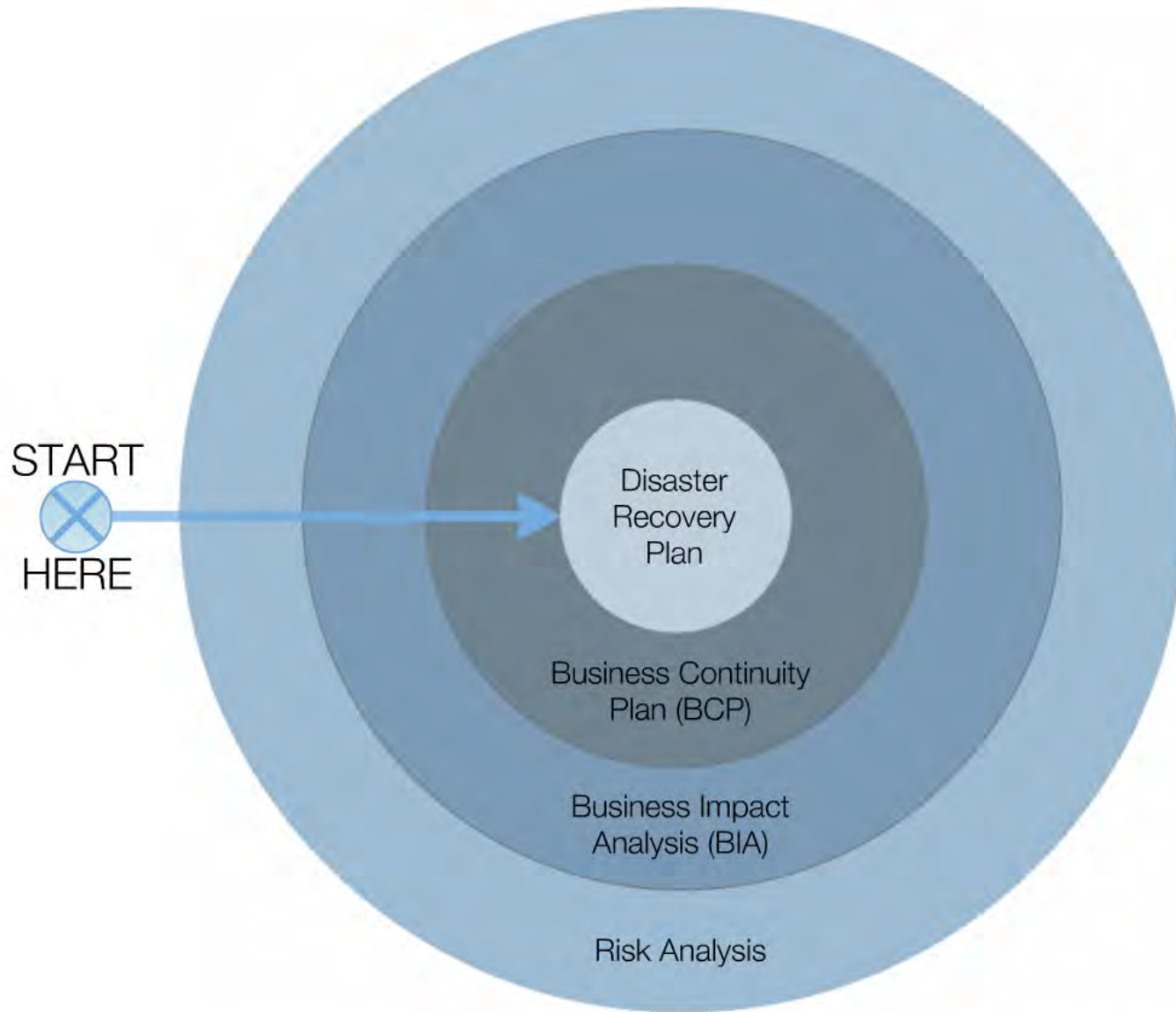
Disaster  
Recovery  
Plan

Business Continuity  
Plan (BCP)



START  
HERE





There's a lot that should happen before you ever get to an actual DR plan





## Risk Analysis

### Risk Analysis

Identifies and quantifies the probable threats to normal business operations and activity

#### What could go wrong?

- Primary data center is flooded
- Your network is cyberattacked
- The bulk of employees fall ill
- Power is lost to your location (air conditioned the core?)

#### Quantify it

- What is the realistic probability of the event?
- If the event occurs, how severe would the impact be?
- Probability x Severity = Overall Risk ✓



## BIA

### BIA

A business impact analysis maps risks to business processes and systems that would be affected if something were to go wrong

#### What comes out of the BIA?

- A document or matrix that maps individual risks to one or more business processes and systems that would be affected
- An estimate of what each interrupted process or downed system might cost the organization, often measured in dollars per hour (DPH)
- Prioritization of processes and systems to protect
- Acceptable loss and downtime windows



## BCP

### BCP

A business continuity plan addresses the findings of a BIA and defines processes to mitigate and/or minimize interruptions to normal business operations

#### What does a BCP cover?

- Manual procedures and work-arounds to keep business moving in the absence of supporting systems
- Key information and logistical plans to address unavailable facilities, equipment, and personnel
- Emergency planning
- Disaster recovery plans



## DR Plan

### DR Plan

(Disaster) recovery plans document requirements and steps for restoring systems to agreed-upon levels of functionality

#### What can be found in a plan?

- An overview of what the plan addresses and what it doesn't address (especially important)
- Recovery procedures (hardware, software, facilities, personnel, etc.)
- References to department information/systems/terms
- Procedures for recovery
- Measurable success criteria for recovery

There are a few outside from the piece of planning and will be seen

# Risk Analysis

Identifies and quantifies the probable threats to normal business operations and activity

## What could go wrong?

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- Your network is cyberattacked
- The bulk of employees fall ill
- Power is lost to your location (who kicked the cord?)

## Quantify it

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# Disaster Recovery Journal


<http://www.drj.com/>

Good online reference for disaster recovery articles, whitepapers, AND other resources.

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## What comes out of the BIA?

- A document or matrix that maps individual risks to one or more business processes and systems that would be affected
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- Acceptable loss and downtime windows 

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These are a key outputs from this phase of planning and will be used extensively in subsequent phases.

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- References to dependent information/systems/items
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## Risk Analysis

### Risk Analysis

Identifies and quantifies the probable threats to normal business operations and activity

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## Risk Analysis

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## BIA

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A business impact analysis makes risks to business processes and systems that would be affected if something were to go wrong.

**What comes out of the BIA?**

- A document or matrix that maps individual risks to one or more business processes and systems that would be affected
- An estimate of what each interrupted process or downed system might cost the organization, often times in dollars per hour (\$/hr)
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*There are a few outputs from this phase of planning that will be used extensively in subsequent phases.*



## BCP

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## DR Plan

**DR Plan**  
Disaster recovery plans document requirements and steps for restoring systems to agreed-upon levels of functionality.

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- Procedures for recovery
- Measurable success criteria for recovery

More abstract



More concrete

More strategic



More tactical

More "business-y"



More technical



# Risk Analysis

**Risk Analysis**  
 Identifies and quantifies the probable threats to normal business operations and activity.

**What could go wrong?**

- Primary data center is flooded
- Your malware is cyberstaked
- The bulk of employees fall ill
- Power is out in your location (who kicked the can?)

**Quantify it**

- What is the realistic probability of the event?
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- Probability x Severity = Overall Risk ✓

# BIA

**BIA**  
 A business impact analysis maps risks to business processes and systems that would be affected if something goes to go wrong.

**What comes out of the BIA?**

- A prioritized or ranked list that maps individual risks to one or more business processes and systems that would be affected.
- An estimate of what each interrupted process or downed system might cost the organization, often times in dollars per hour (\$/hr).
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- Acceptable loss and downtime windows.

There are a big subject for the plan of planning one will be used according to subsequent plans.

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- Communications plans.
- Disaster recovery plans.

# DR Plan

**DR Plan**  
 Disaster recovery plans document requirements and steps for restoring systems to agreed-upon levels of functionality.

**What can be found in a plan?**

- An overview of what the plan addresses and what it doesn't address (usually important).
- Recovery procedures (hardware, software, facilities, personnel, etc).
- Resources to dependent information/systems/time.
- Procedures for recovery.
- Mass jobs to success criteria for recovery.

More abstract



More concrete

More strategic



More tactical

More "business-y"



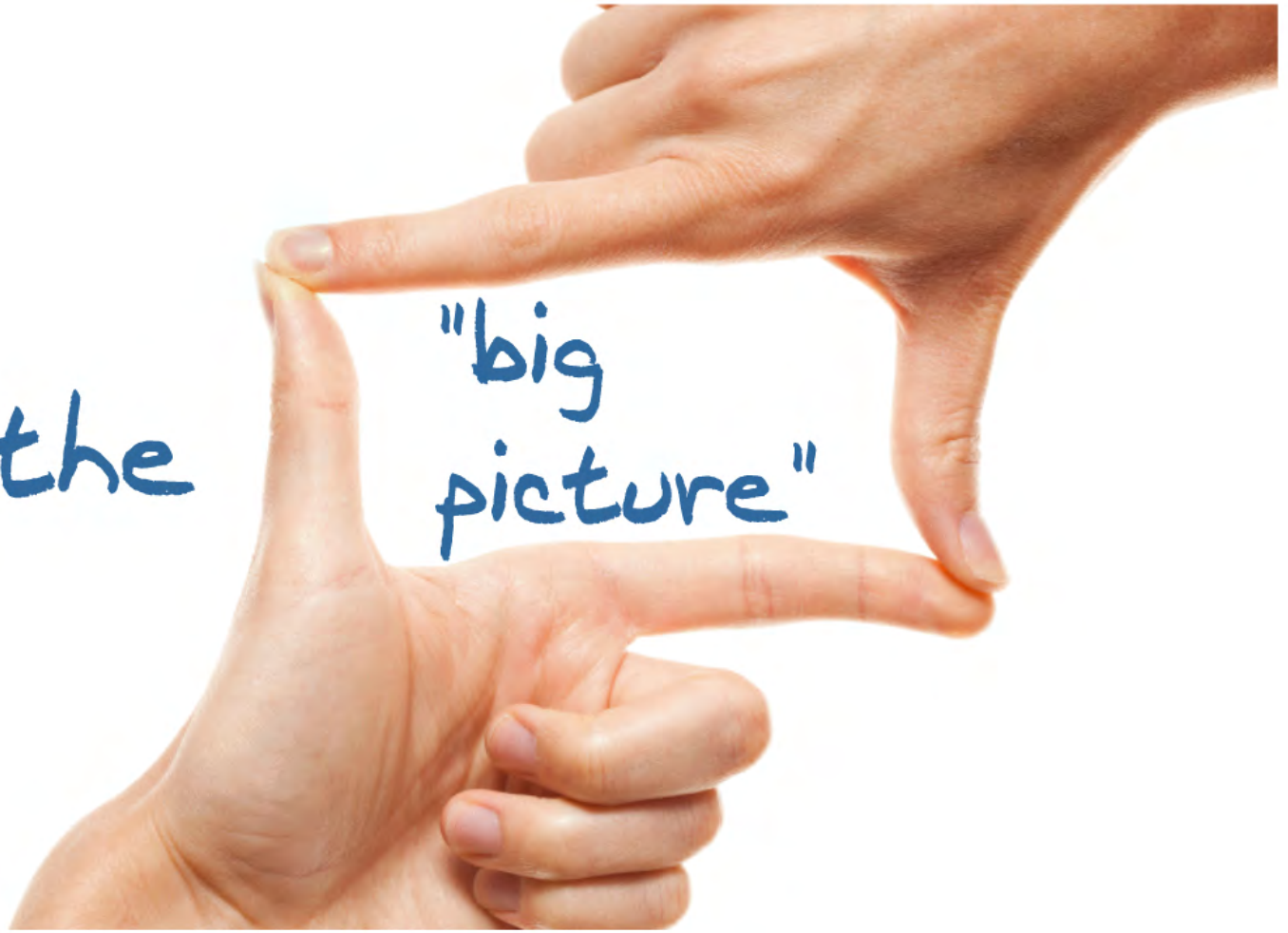
More technical

## Disclaimer

There are many approaches to quantifying disaster risks and building contingency plans; I'm presenting only one. Form isn't nearly as important as simply ensuring you have a strategy!

that was the

"big picture"



The focus going forward  
is on ...

the DR  Process

... which is driven by RPO  
and RTO requirements

# RPO



Recovery  
Point  
Objective

# RTO



Recovery  
Time  
Objective

# MTD



Maximum  
Tolerable  
Downtime

*That's all great, but what do they really MEAN?*

They define operational windows that guide and inform your selection of technologies and strategies for recovery

RPPO



# RPO (Recovery Point Objective)

Monday Jul 4 2011

1:00 AM 2:00 AM 3:00 AM 4:00 AM 5:00 AM 6:00 AM 7:00 AM 8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM 6:00 PM 7:00 PM 8:00 PM 9:00 PM 10:00 PM

- "looks backwards"
- defines maximum acceptable data loss

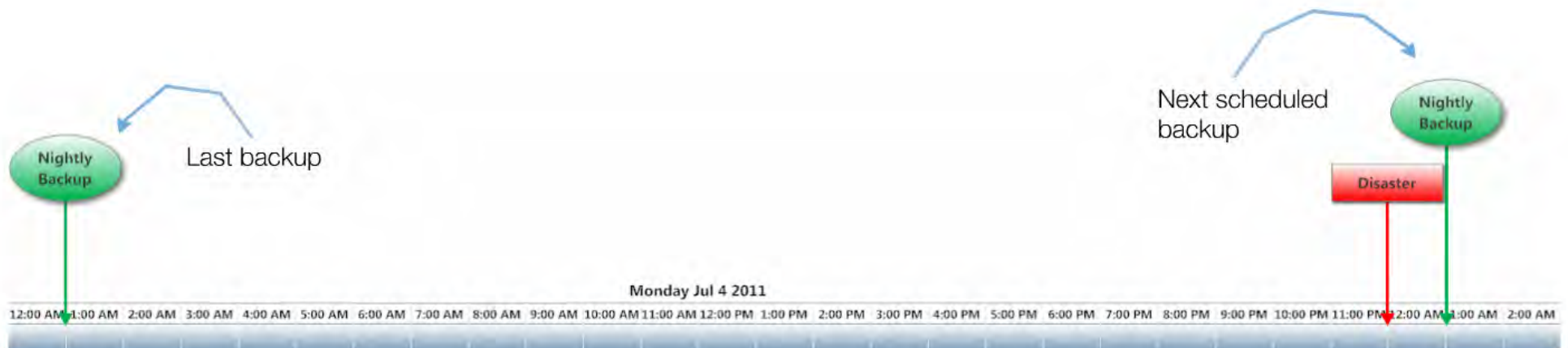


Your data center just  
took a mortar ...

RPO (



# RPO (Recovery Point Objective)



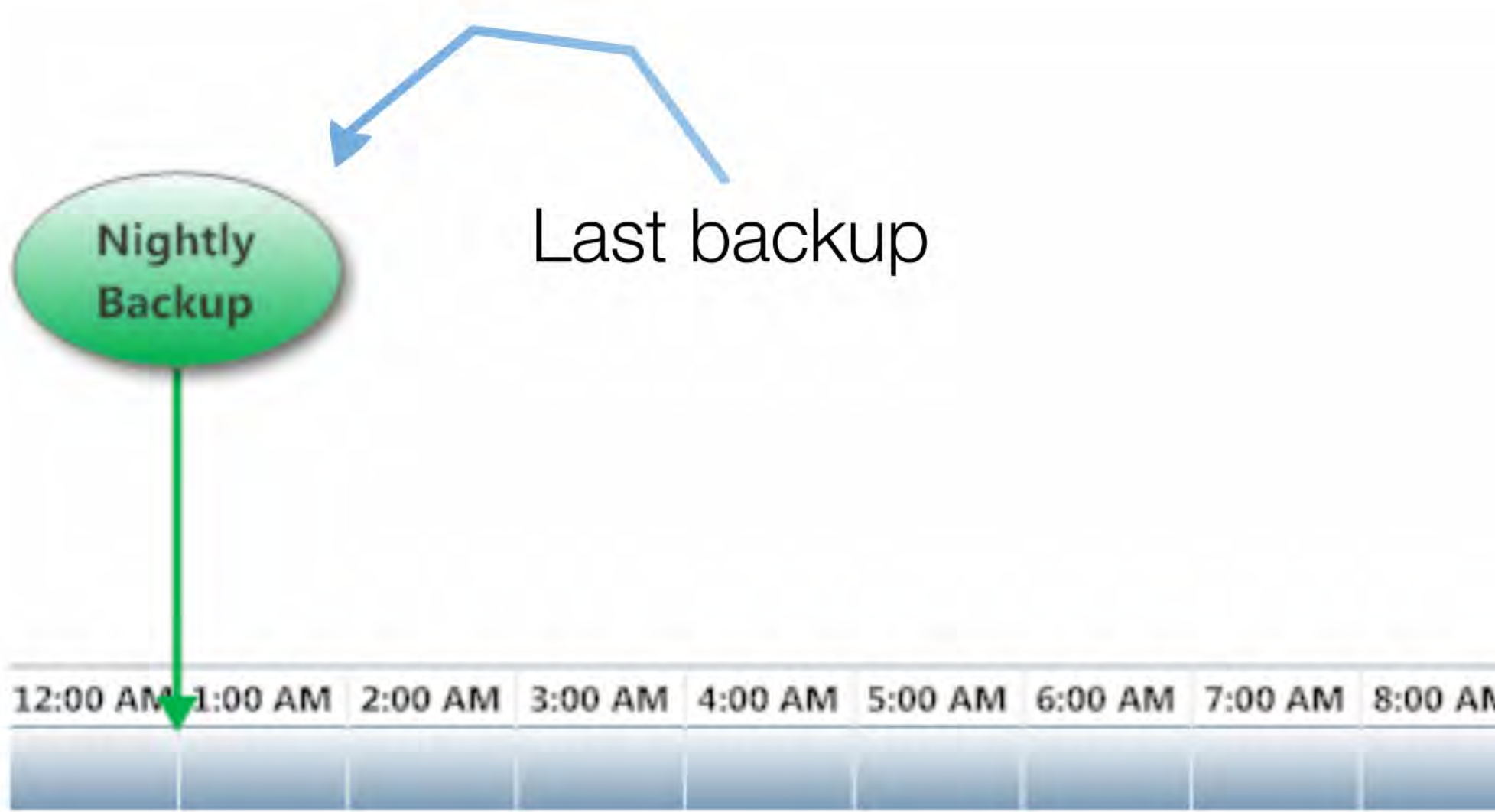
Next scheduled  
backup

Nightly  
Backup

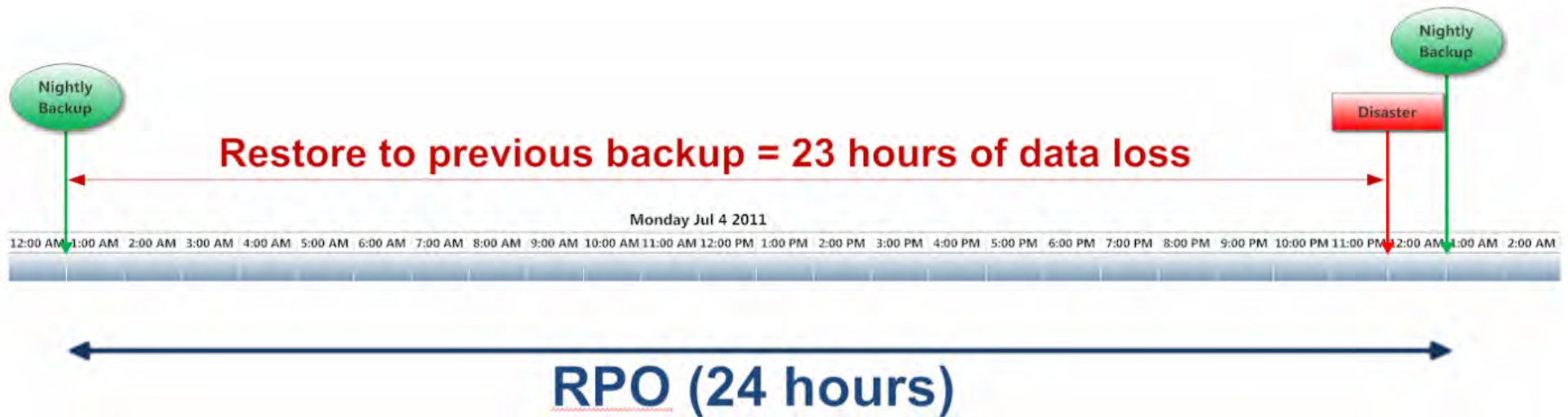
Disaster

M 6:00 PM 7:00 PM 8:00 PM 9:00 PM 10:00 PM 11:00 PM 12:00 AM 1:00 AM 2:00 AM



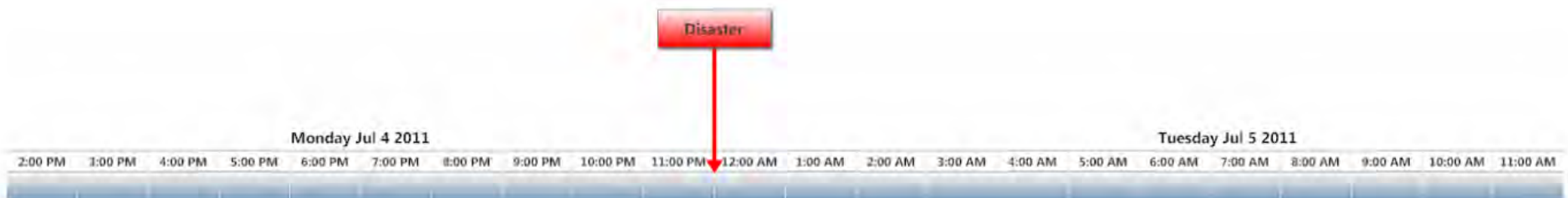


# RPO (Recovery Point Objective)





# RTO (Recovery Time Objective)



- "looks forward"
- defines how much time you have to get things working again

# RTO (Recovery Time Objective)



← RTO (8 hours) →

# RTO (Recovery Time Objective)



**RTO (8 hours)**



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# MTD (Maximum Tolerable Downtime)

- Refers to the maximum time permitted before operations are restored following a disaster
- Different from RTO in that it includes business procedures, human factors, etc. - not just the system restore time (i.e., time to execute a recovery plan)

We'll be focusing on RPO and RTO

The focus going forward  
is on ...

the DR  Process

... which is driven by RPO  
and RTO requirements

Please allow me a  
moment to preach ...





Risk analysis

BIA

BCP



DR Plan

*RPO and RTO are determined up here*

*Implementation takes place down here*

Business



Technical

*If you're trying to build a DR Plan without business input, you're doing it wrong.*

*Kind of like ...*

Kind of like ...

DR Plan



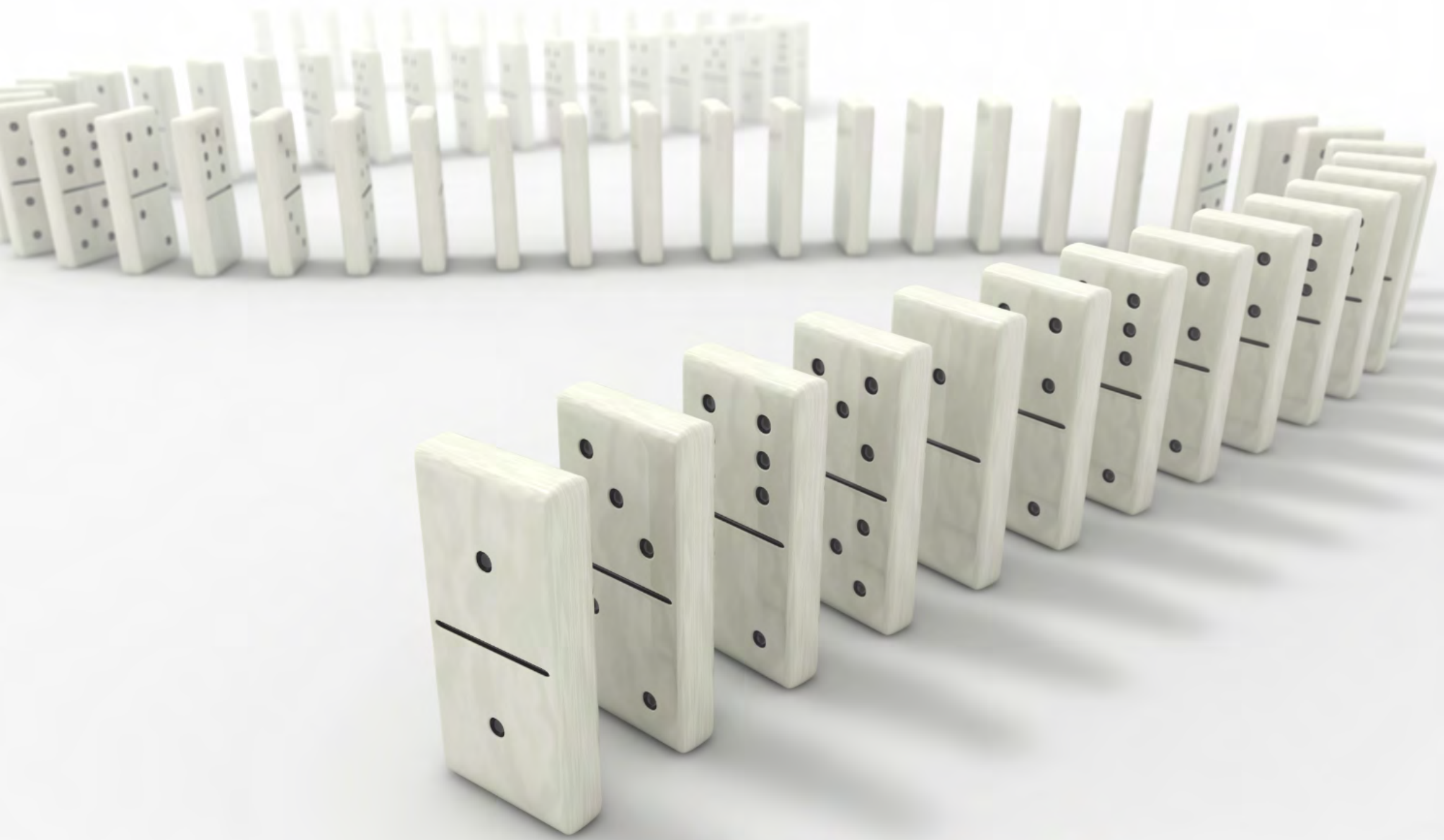
Business  
Continuity  
Strategy



If I haven't beat the horse  
to death enough for you ...



<http://sharepointinterface.com/2009/07/08/rpo-and-rto-prerequisites-for-informed-sharepoint-disaster-recovery-planning/>



The DR Process



**Assessment**



**Planning**

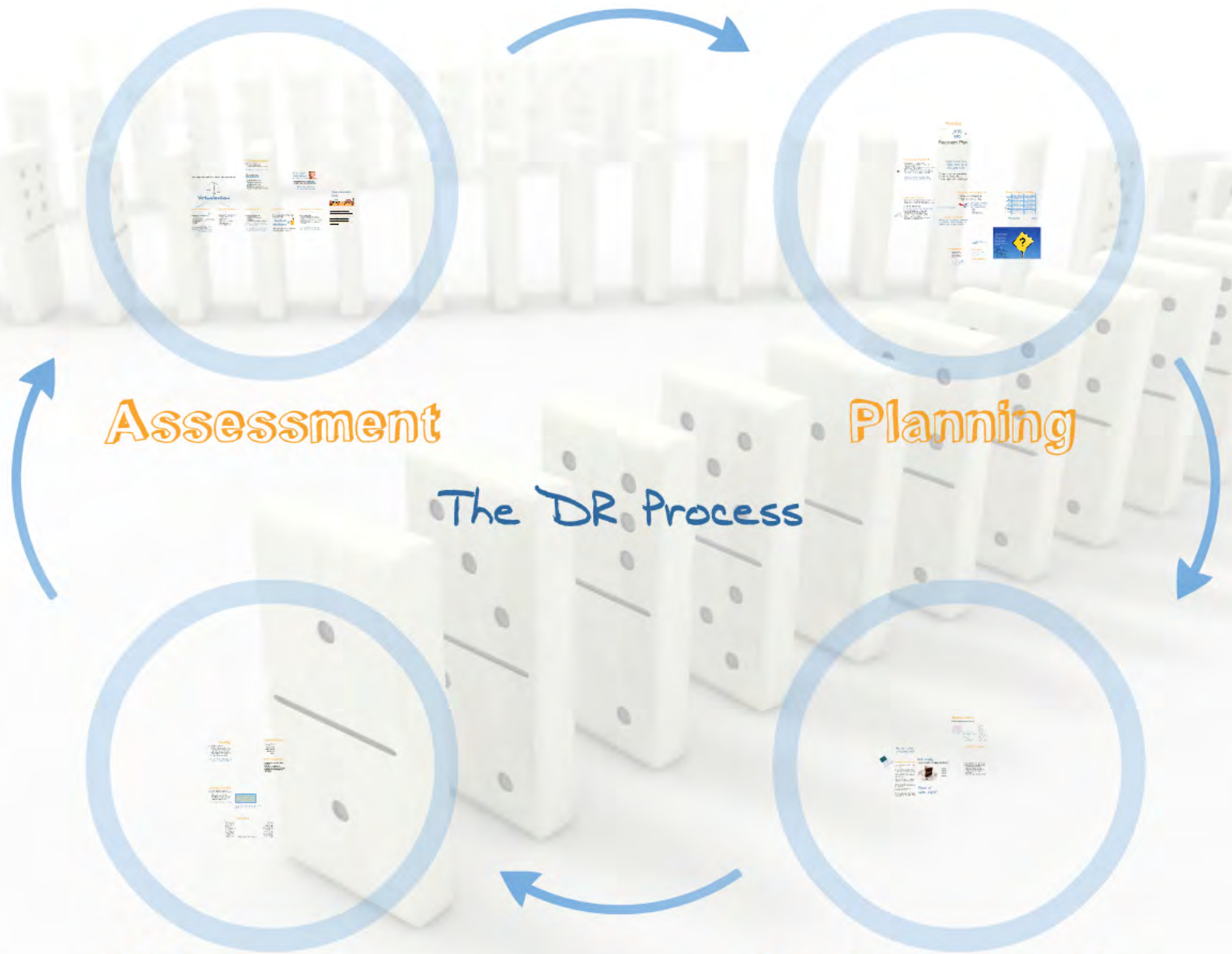
The DR Process



**Maintenance**



**Implementation**







# Assessment



# Assessment

Building an understanding of

- The SharePoint platform itself
- Your SharePoint environment as it exists today

Accomplished through two "D" words

## Discovery

# Discovery

- Logical architecture
- Physical deployment
- Configuration data
- Business data (content)
- Dependencies and interfaces

Before we go too far, we should probably talk about the other "D" word



You're going to have to document your discoveries and SharePoint itself



Believe it or not, there are tools that can help.

# Logical Architecture

- Focuses on the SharePoint's software/service components, what they do, and how they relate to one another  
Particular attention is placed on platform elements you use

## Commonly documented

- IIS application pools
- SharePoint Web applications
- Service applications (Search, BCS, Managed Metadata, etc.)
- Zones and alternate access mappings
- Web application policies
- Content databases
- Site collections
- My Sites

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- IIS application pools
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- Content databases
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Goal: show which pieces of SharePoint are in-use, how they interrelate, and how they work together

Think "birds-eye" view of logical farm components - not physical layout/usage

# Physical Architecture

- Focuses on SharePoint's implementation across a set of infrastructure components and hardware

## Commonly documented

- Physical servers used by SharePoint
- SQL Servers
- Storage area networks (SANs)
- Switches
- Wide area network (WAN) connections
- Firewalls
- Hardware load balancers
- Active Directory domain controllers
- Email relays and gateways

The modern monkeywrench that makes all of this more complicated:



# Virtualization



**Logical Architecture**



**Physical Architecture**



- 33% of small and mid-size businesses (SMBs) admitted that they do not back up virtual servers as often as physical servers
- 49% back up virtual machines weekly or monthly
- 37% back up virtual machines each day

Source: Acronis Global Disaster Recovery Index 2012  
[http://acronisinfo.com/?attachment\\_id=521](http://acronisinfo.com/?attachment_id=521)

# Configuration Data

- Focuses on the data and settings that make SharePoint and its constituent components/pieces operate.

## Commonly includes

- Farm configuration database
- Non-content service application databases
- Web.config files
- IIS7 configuration files
- Other configuration stores tied to logical architecture items

# Commonly includes

- Farm configuration database
- Non-content service application databases
- Web.config files
- IIS7 configuration files
- Other configuration stores tied to logical architecture items

Initially, it is more important to understand where data resides and the form it takes than to document actual settings

Pay close attention to secure configuration data, configuration data that is stored in a tough-to-reach manner, and distributed configuration

# Business Data

- This is data that gets created and exists within SharePoint as a result of day-to-day business

If you remember nothing else,  
remember this:

Content  
databases

=



as in "most important business  
data locations to protect"

# Dependencies & interfaces

- These are the points where SharePoint touches other line of business systems - including other SharePoint farms.

# Some examples

- HR Data consumed through an external list using BCS
- Search that is supplied through a separate services-only SharePoint farm
- A Page Viewer web part that exposes a non-SharePoint Web application using an iframe
- InfoPath forms that pull data from (or write data to) non-SharePoint systems

*These are important to identify for purposes of determining what is ultimately included in (and excluded from) your SharePoint DR plan*

# Documentation tools





# Creating SharePoint diagrams

Technical diagrams (SharePoint Server 2010)

<http://technet.microsoft.com/en-us/library/cc263199.aspx>

Visio stencils for IT Pro posters

<http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=11616>

# PowerShell farm documentation

Document farm configuration settings (SharePoint Foundation 2010)

<http://technet.microsoft.com/en-us/library/ff645390.aspx>

Document farm configuration settings (SharePoint Server 2010)

<http://technet.microsoft.com/en-us/library/ff645391.aspx>

# Documentation Toolkit for SharePoint

<http://www.spdockit.com/>

*note: not free*



**Assessment**



**Planning**

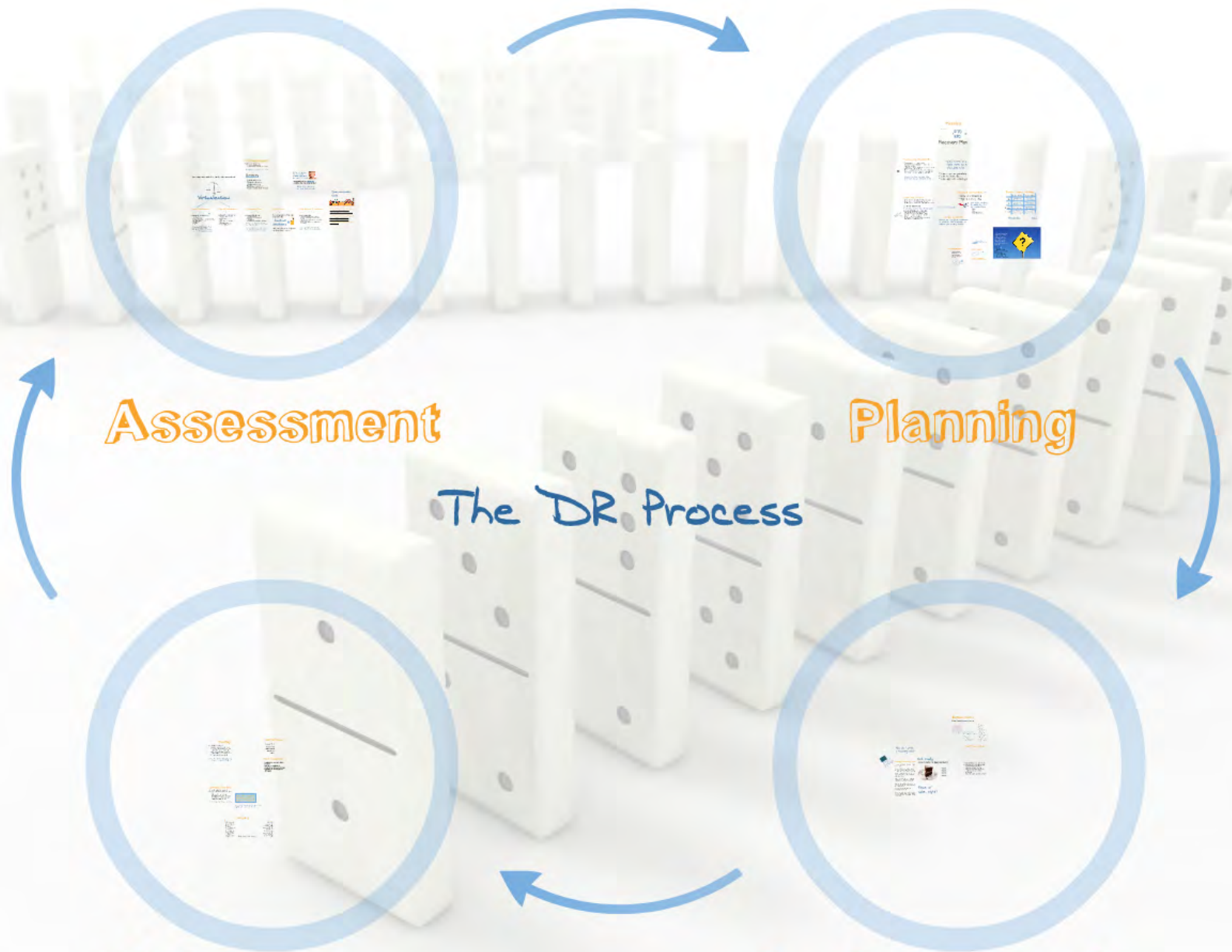
The DR Process



**Maintenance**



**Implementation**





### Planning RTO RPO Recovery Plan

**Review and Understand**  
Common Question:  
- How long will it take to get back up and running?  
- How much data will I lose?  
- How much will it cost?

What share is a 15% more, so it's 10% less?  
- Define scope and granularity  
- Define recovery targets  
- Define approach (technology)

**Business Targets**  
- Can I afford to lose any data?  
- How long can I be down for?  
- How much will it cost?

**Recovery approaches**  
- Backup and restore  
- High availability (HA)  
- Replication  
- Cloud  
- Disaster Recovery as a Service (DRaaS)

**Feature what solution**

Backup	HA	DRaaS
Cost	High	Low
RTO	Low	High
RPO	High	Low
Complexity	High	Low
Scalability	Low	High
Control	High	Low

**Simple example**  
- 10GB of data, 10% of total  
- 10GB of data, 10% of total  
- 10GB of data, 10% of total

**5/10/30 Approach**  
- 5 days, 10% of data, 30% of cost



# Planning



# Planning

Assessment Results



$$+ \begin{matrix} \text{RTO} \\ \text{RPO} \end{matrix} =$$

# Recovery Plan



Well, there is a little more to it than just that

- Define scope and granularity
- Define recovery targets
- Define approach (technology)

# Scope and Granularity

## Common Questions

- Do you treat your SharePoint farm as one big system or as multiple functional pieces?
- What's not in-scope for your plan? Are one or more separate (but dependent systems) included?
- How do you handle regional disasters such as earthquake, flood, or attack? The choice carries data center implications
- Can you (or do you even want to) leverage the cloud?

- 23% of all businesses don't have an offsite backup strategy in place today
- 42% rely on onsite backups to tape or disk and then take those (physically) offsite each day

Source: Acronis Global Disaster Recovery Index 2012  
[http://acronisinfo.com/?attachment\\_id=521](http://acronisinfo.com/?attachment_id=521)

# Cloud computing



- Is not a DR "magic bullet"
- Simplifies some aspects of DR (availability) but complicates others (RPO/RTO, security)
- Comes in many different shapes, forms, and hybrids (Office 365, ITaS, private cloud, etc.)

Figure out if the cloud will be part of your DR strategy early on!



# Scope and Granularity

## Common Questions

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Answers to these questions help determine how you ultimately define ...

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## Recovery Targets

# Recovery Targets

- Specify what to restore in SharePoint through mapping of business processes to SharePoint functional area
- Prioritized from most critical to least critical (RPO, RTO, \$\$\$)

## Simple example

"I need to restore the HR intranet"

May entail building and/or restoring:

- A SharePoint farm (baseline environment)
- Content database housing the HR site collection
- BCS and associated connections to external line-of-business systems housing HR data
- Secure Store service for required BCS credential sets
- InfoPath Services for HR-related forms
-

These are all  
recovery targets



- M...
- A S...
- Contel
- BCS and
- business sy
- Secure S+
- Infopar



## Define Approach

What is the appropriate combination of strategies AND technologies to address your recovery targets?

# Common approaches with many variations

- Backup and restore
- High availability (HA)



Your choice will likely be guided by a few key considerations:

- RPO
- RTO
- Resources (Cost)

# Factors when selecting

	Backup & Restore	High Availability
RPO	Typically hours	From minutes down to zero
RTO	Typically hours	From minutes down to zero
Resources	Less expensive	Significantly more expensive
Examples	SharePoint native backups SQL Server backups Enterprise backup systems 3rd party SharePoint backups	Windows clustering Replication products SQL Server mirroring Transaction log shipping



Virtualization



Cloud

What should you protect?

Technical (recovery) targets you select depend on your strategy, but most plans include the following critical (technical) items at a minimum:

Databases

- Content ✱
- SSP/Service App

Solution packages (WSPs)

Documentation

- Farm configuration
- Server configuration
- Accounts & permissions





# 2 FREQUENTLY ASKED QUESTION

How do I get a list of  
everything I should protect?



## Core SharePoint targets

aka, "the meat and potatoes"

- Content databases
- Central Admin content DB
- Farm Configuration database
- Service Applications / SSPs
- Search



## Related targets

"important to remember"

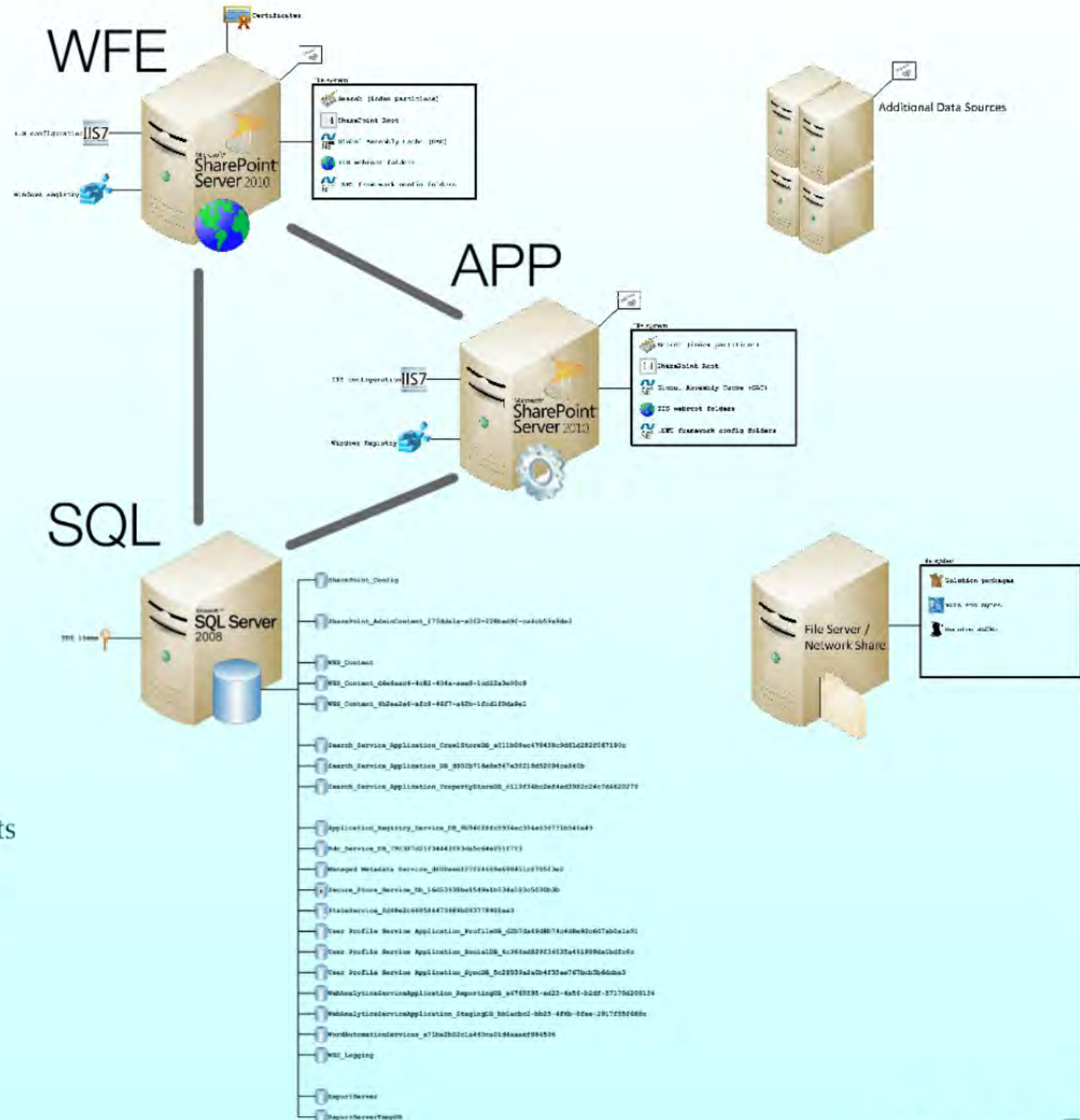
- Solution packages
- SharePoint Root
- IIS Configuration
- Certificates
- IIS web root
- GAC
- Registry
- Bits and bytes



## Edge cases and esoteric targets

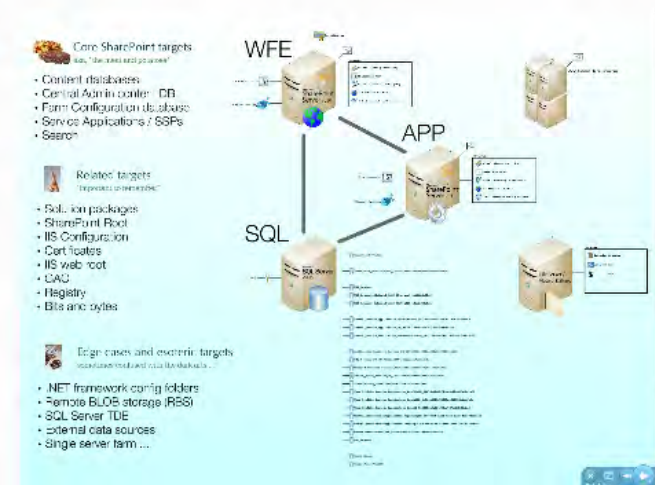
sometimes confused with the dark arts ...

- .NET framework config folders
- Remote BLOB storage (RBS)
- SQL Server TDE
- External data sources
- Single server farm ...



# Answer:

There is no definitive "list of everything." No two SharePoint farms (or DR plans) are the same.



You'll have to build your own list based on what you use in your farm

# Documentation



Of course you need to document your DR plan!

Documentation of the plan spans this phase and the next phase ...

on plan!

Documentation of the plan  
spans this phase and the  
next phase ...

Let's be honest:

documentation spans every  
phase of the DR process.

There's a focus on it here  
and in the next phase, though.



**Assessment**



**Planning**

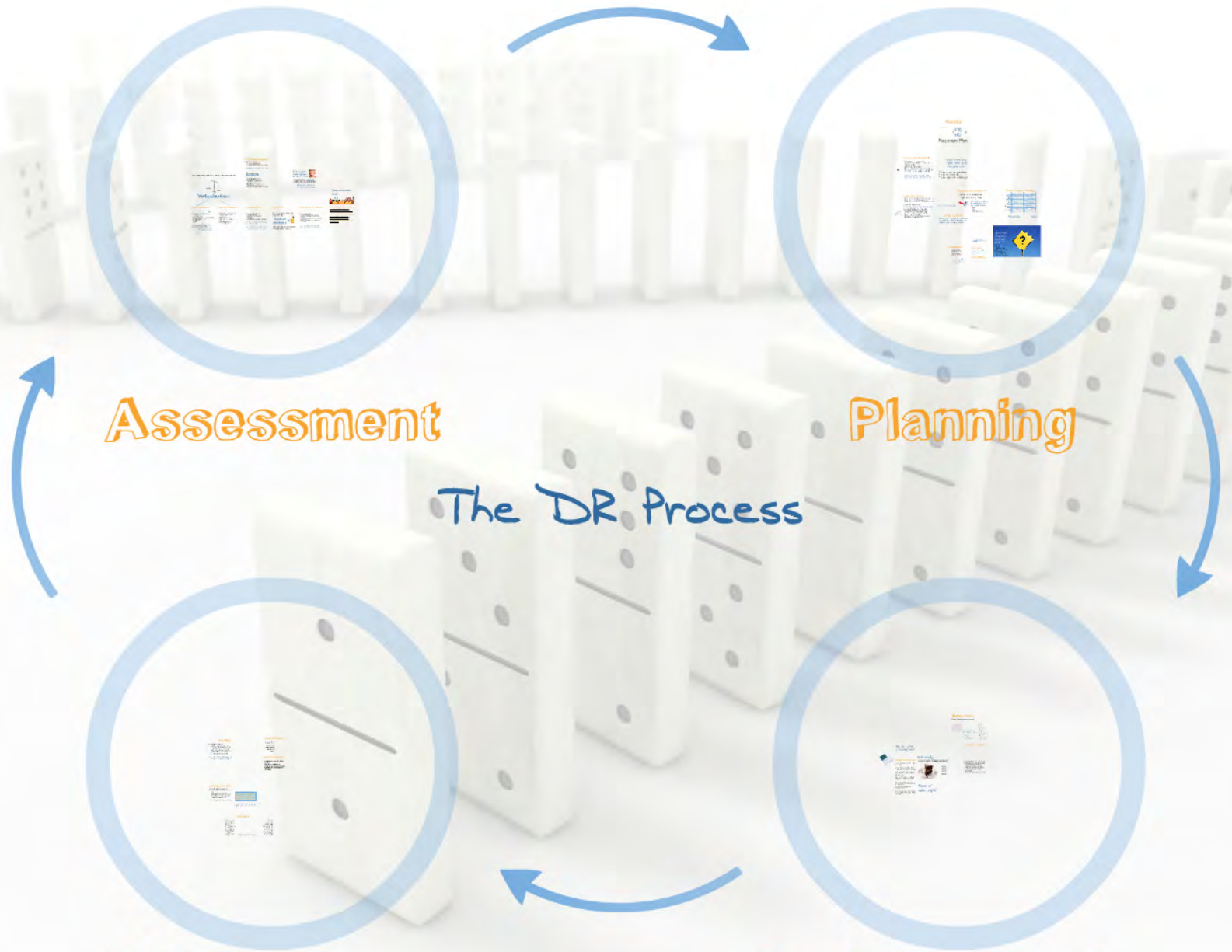


**Implementation**



**Maintenance**

The DR Process





# Implementation

# Implementation

Where the rubber meets the road



Write the plans ...



Assemble resources ...



# QUESTION FREQUENTLY ASKED QUESTION

How do I write  
A recovery plan?



Start by talking to those in your organization who have some responsibility for business continuity.

Write

# Writing a recovery plan

## Characteristics of a good recovery plan

- The plan should address a discrete system or subsystem
- Clearly identifies any assumptions made by the plan - hardware, software, dependent system restores, knowledge to execute, etc.
- Identifies participants and the role they play in the plan - typically by group or company rather than individual

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- Outlines steps for recovery in explicit detail - written to a lowest common denominator without requiring specialized knowledge
- For each step, potential misteps are spelled-out along with corrective actions that may be taken (if applicable)
- Specifies objective criteria for recovery confirmation and/or success

written to a lowest common denominator  
without requiring specialized knowledge

- For each step, potential mistakes are spelled-out along with corrective actions that may be taken (if applicable)
- Specifies objective criteria for recovery confirmation and/or success
- Includes any post-recovery notes directing personnel to further actions or plans that are coupled (implicitly or explicitly) to the current recovery plan

## CHARACTERISTICS of A good recovery plan

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- Identifies participants and the role they play in the plan - typically by group or company rather than individual
- Outlines steps for recovery in explicit detail - written to a lowest common denominator without requiring specialized knowledge
- For each step, potential misteps are spelled-out along with corrective actions that may be taken (if applicable)
- Specifies objective criteria for recovery confirmation and/or success
- Includes any post-recovery notes directing personnel to further actions or plans that are coupled (implicitly or explicitly) to the current recovery plan



Piece of  
cake, right?

Not really.

Recovery plans are living documents



Iterate  
Iterate  
Iterate  
Iterate  
....

# Implementation

Where the rubber meets the road



Write the plans ...



Assemble resources ...





Assemble resources ...

Some things to consider

#### Software

- Licenses
- Install media

#### Physical storage

- Documents/plans/lists/etc.
- Secure or sensitive items

#### Hardware

- SharePoint Servers
- SQL Servers
- Switches
- Storage/SANs
- Firewalls
- AD controllers/appliances
- DNS servers/appliances
- Load balancers

#### Facilities (if required)

- Rent/buy space
- Data center build-out
- WAN connectivity
- HVAC
- Fire suppression
- (Voice) communications
- Security
- Backup generators/power

Don't lose sight





Your SharePoint recovery plans should be tying into one or more bigger BCPs

- Communications plan tie-ins
- Criteria for DR plan activation
- Clear documentation of (manual) workarounds for non-restored functionality
- Integration points with other DR plans



**Assessment**



**Planning**

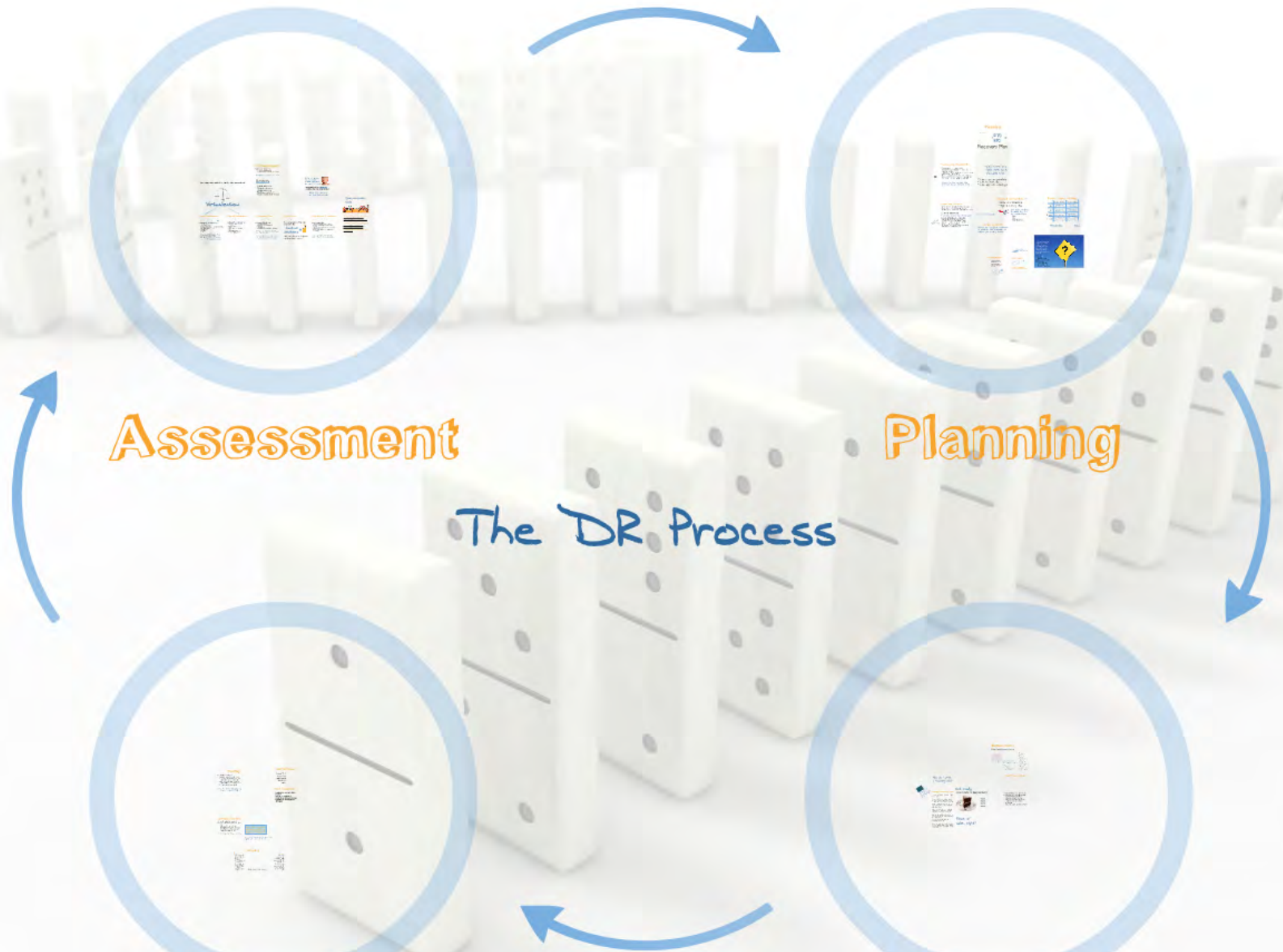


**Implementation**



**Maintenance**

The DR Process



# Maintenance

## Twisting

Twisting is a common problem that occurs when the cable is not properly supported or when the cable is subjected to excessive tension. This can lead to cable failure and data loss.

Make sure cables are properly supported and that they are not subjected to excessive tension.

## Interference

Interference is a common problem that occurs when the cable is subjected to electromagnetic interference (EMI) or radio frequency interference (RFI). This can lead to data corruption and loss.

Make sure cables are properly shielded and that they are not subjected to excessive EMI or RFI.

## Wear and Tear

Wear and tear is a common problem that occurs when the cable is subjected to excessive use or when the cable is not properly maintained. This can lead to cable failure and data loss.

Make sure cables are properly maintained and that they are not subjected to excessive use.

## Overheating

Overheating is a common problem that occurs when the cable is subjected to excessive heat. This can lead to cable failure and data loss.

Make sure cables are properly cooled and that they are not subjected to excessive heat.

## Moisture

Moisture is a common problem that occurs when the cable is subjected to excessive humidity. This can lead to cable failure and data loss.

Make sure cables are properly protected from moisture and that they are not subjected to excessive humidity.

# Maintenance

The part that  
many of us  
wish would  
simply go  
away.



# What's included?

- Exercises that test and validate DR plans
- Updates to your plans as SharePoint environments change
- Budgeting for the changes that will happen

**PASS**



**FAIL**



# Testing

How testing can help you

- Identify gaps in plans so that you can address them before a disaster
- Validate that you can actually hit RPO and (especially) RTO targets
- With repetition, you can reduce your RTO (practice makes perfect!)



## How testing can help you

- Identify gaps in plans so that you can address them before a disaster
- Validate that you can actually hit RPO and (especially) RTO targets
- With repetition, you can reduce your RTO (practice makes perfect!)

*Bottom line: without testing you'll never know if your recovery plans actually work*

# Updating Your Plan

As your SharePoint environments change, so too must your recovery plans

- RPO and RTO may change
- SharePoint farms grow and evolve
- SharePoint used for new purposes
- Offsite DR facilities change

*Your DR plans are living documents ...*



Don't leave your  
recovery plans to  
become "undead"

They don't "go away" because you abandon them;  
they just take on an un-life of their own ...

# Budgeting





Both time AND money

# Time

- Carry out DR tests (personnel, facilities time, business downtime)
- Review, maintain and update DR plans
- Review changes to SharePoint farms
- Audit plans with an eye towards compliance with any regulations



Both time AND

# Money

- Salary costs associated with dedicating time to DR activities
- Costs associated with offsite facilities
- Recurring licensing costs\*
- Costs associated with independent auditing of systems and DR plans



and money



**Assessment**



**Planning**

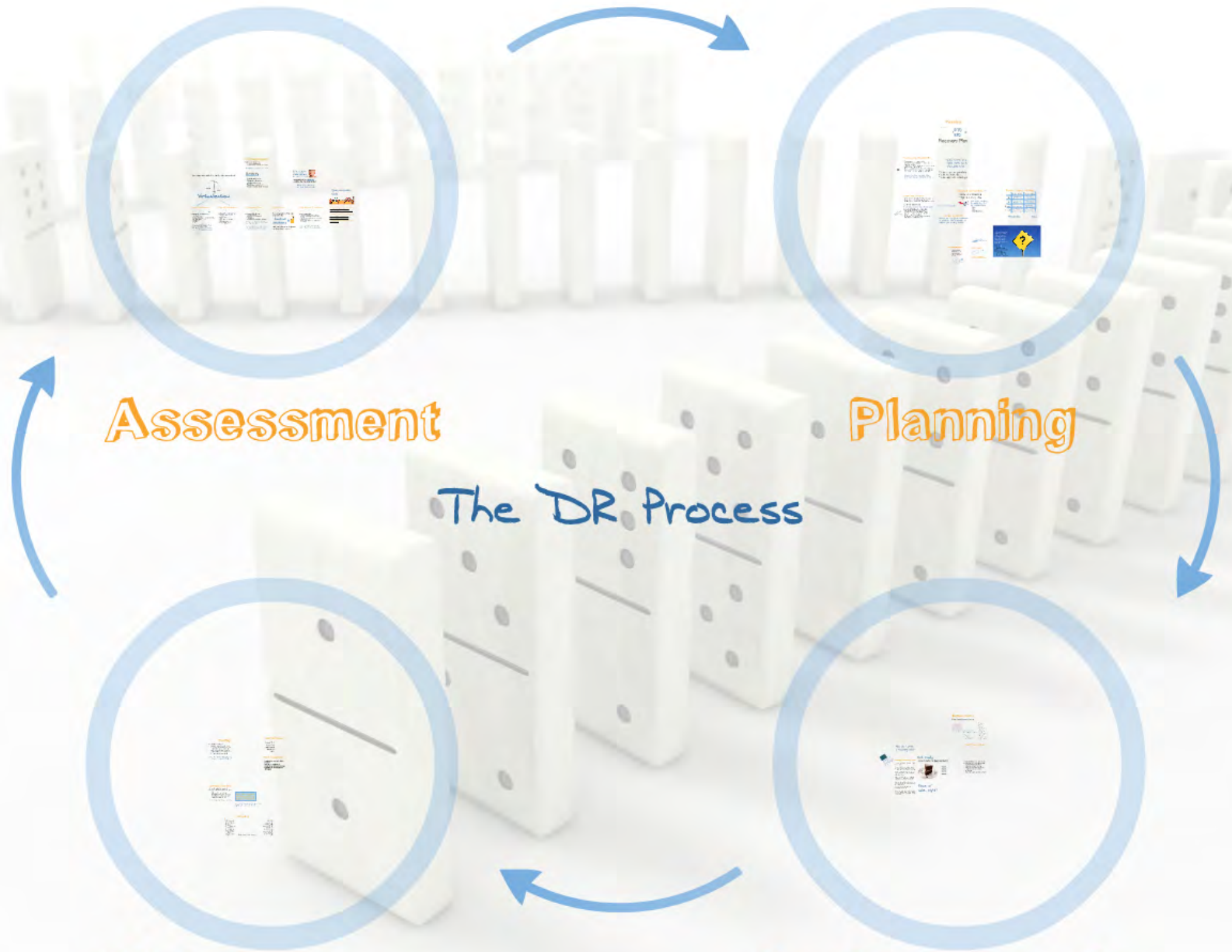


**Implementation**



**Maintenance**

The DR Process





# The dirty secret

Nobody gets this  
"right" the first time;  
that's why it's a  
continuous process



Assessm



An  
important  
resource

NIST Special Publication 800-34 Rev. 1

**Contingency Planning Guide for  
Federal Information Systems**

Marianne Swanson  
Pauline Bowen  
Amy Wohl Phillips  
Dean Gallup  
David Lynes

May 2010



U.S. Department of Commerce  
*Gary Locke, Secretary*

National Institute of Standards and Technology  
*Patrick D. Gallagher, Director*

NIST Special Publication 800-34, Rev. 1, Contingency  
Planning Guide for Federal Information Systems

[http://www.nist.gov/manuscript-publication-search.cfm?pub\\_id=905266](http://www.nist.gov/manuscript-publication-search.cfm?pub_id=905266)

# Wrap-up

- Remember the order of operations:

Risk Analysis → BIA → BCP → DR Plan

- RPO AND RTO drive MANY of the DR planning decisions you'll make
- No two SharePoint environments are alike; no two DR plans are identical
- Recovery plans are living documents that you'll constantly test AND revise



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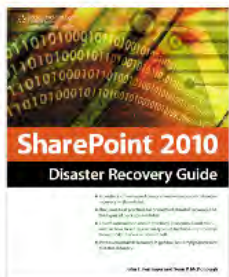
**LinkedIn:** <http://www.linkedin.com/in/smcdonough>

**Twitter:** [@spmcdonough](https://twitter.com/spmcdonough)



SharePoint 2007 Disaster Recovery Guide

<http://tinyurl.com/SPDRGuide2007>



SharePoint 2010 Disaster Recovery Guide

<http://tinyurl.com/SPDRGuide2010>