

# Hypermiling with SharePoint Data Protection



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Hypermiling?







Please discuss this in  
[layout guide](#) to make  
all essential details.

**Hypermiling** is the act of driving using techniques that [maximize fuel economy](#). Those who practice these techniques are referred to as "hypermilers."<sup>[1]</sup>

Hypermiling can be practiced in any vehicle  
popularity as a result of the [rise in gasoline](#)

# How do we extend this concept to SharePoint?



## Hypermiling?



The owner's manual  
for my Prius



**2005 Owner's  
Manual**

*For your safety and comfort,  
read carefully and keep in the vehicle.*

***PRIUS***

# The Agenda for this Session

二U-7

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## Core Concepts

- Backup and Restore
- Export and Import
- High Availability

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## Task-Oriented Discussion + Demos

- Farm Backup/Restore
- Using SQL Server's Tools
- Content Export/Import
- Site Collection Backup/Restore

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## Add-Ons for "Greater Mileage"

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## Core Concepts

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## Add-Ons for "Greater Mileage"





# Core Concepts

- Backup and Restore
- Export and Import
- High Availability

# • High Availability

## Protection through redundancy

- SQL Clustering
- SQL Database Mirroring
- SQL Transaction Log Shipping
- SQL Always-On (SQL 2012)

Not on-tap for today's discussion



# Where we will focus:



- Backup and Restore
- Export and Import



What's the difference?



Let's start with a backup

Source Data:



Source Data:



**Backup**

Backup Set:



The call comes ...





Backup Set:



**Restore**

Result:



Result:



1-to-1 equivalence  
with source data

Now let's look at an export

Source Data:





Source Data:



**Export**

Export Package:



The call comes ...



Export Package:



Import

Result:



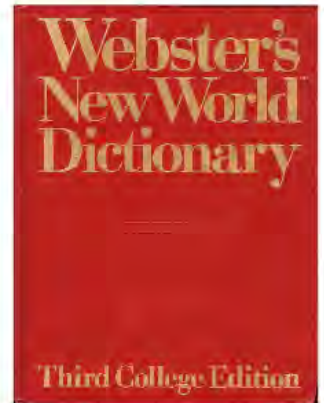


Result:



Not an identical copy of original. Still \$2.00, but a transformation has occurred.

# How I define things



## Backup/Restore

- Captures source data in full-fidelity, 1:1 fashion
- What you put in is exactly what you get back out

## Export/Import

- Captures source data at less than full-fidelity
- Some transformation of data may occur
- You get out a "relevant" subset of what goes in
- More portable and manipulable than backups

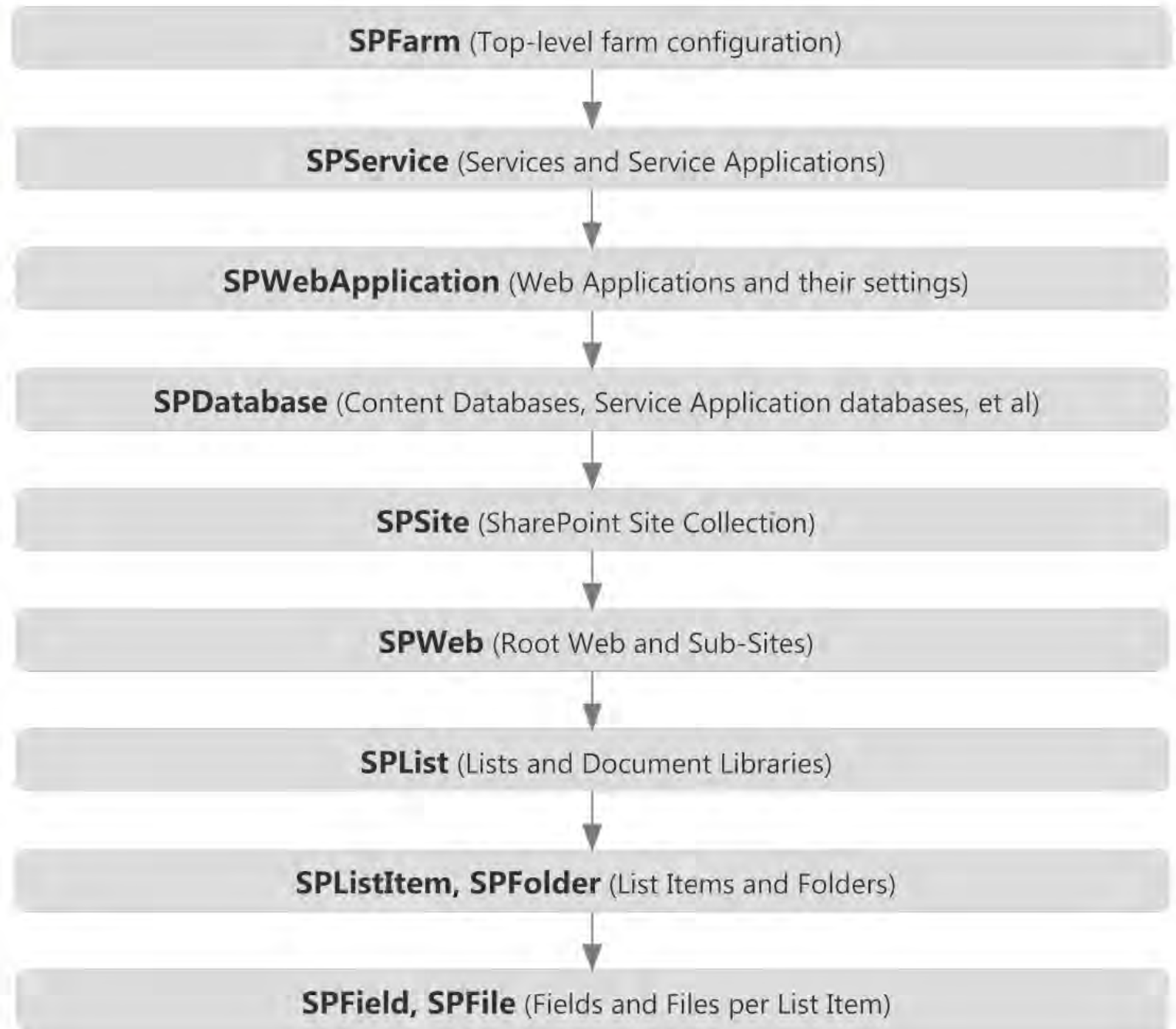
Two hands are positioned to form a rectangular frame. The top hand's index finger points left, and the bottom hand's index finger points right. The thumbs of both hands point towards each other, creating a rectangular opening in the center. The text "So, to take a step back ..." is centered within this opening. The background is a solid, bright white.

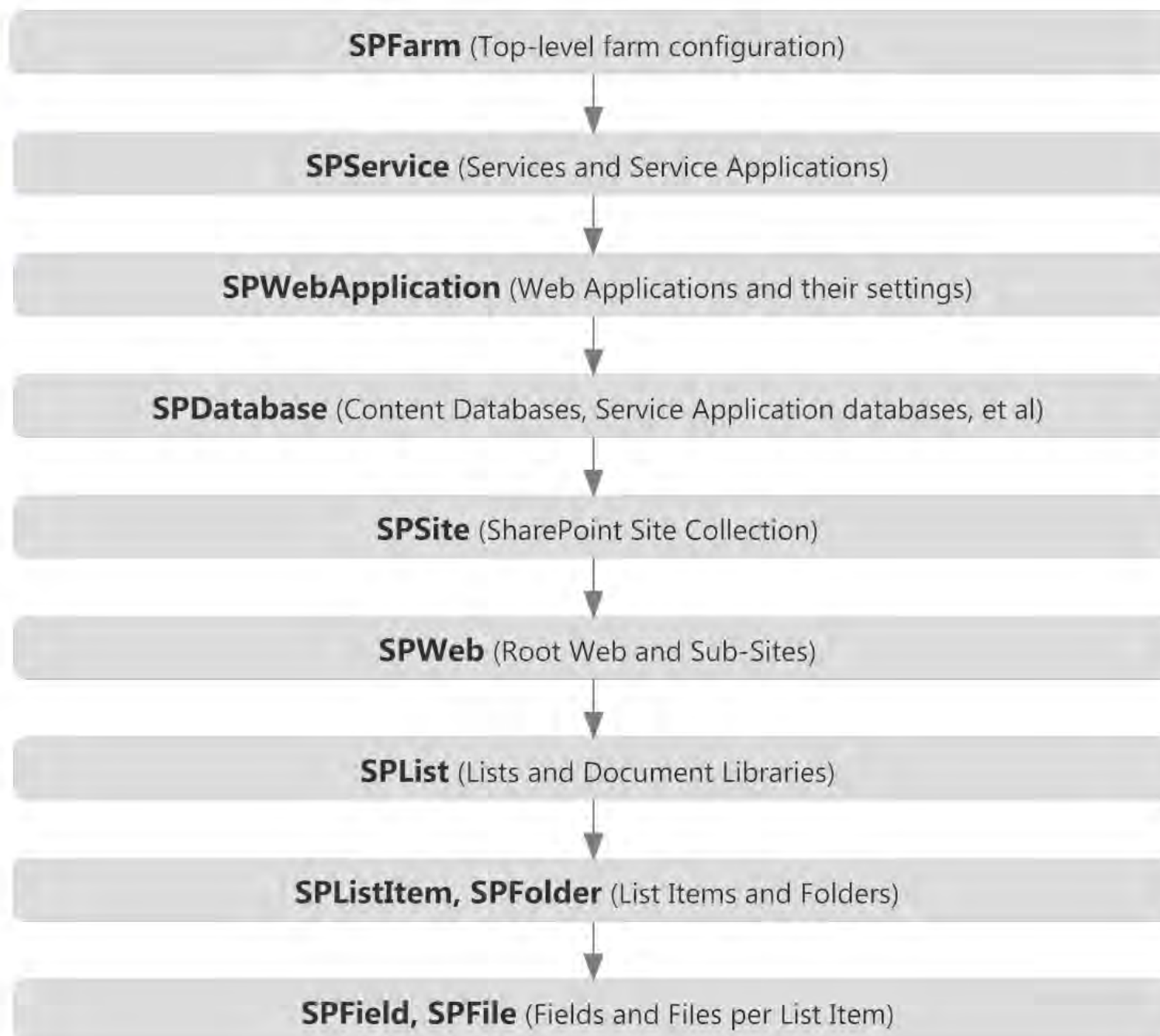
So, to take a  
step back ...



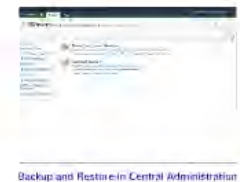
# SharePoint Object Model Hierarchy

Parent  
↓  
Children





Farm  
Backup &  
Restore



Granular  
Backup

Site Actions ▾  Browse Page SPDEMO\Administrator ▾

 Microsoft SharePoint 2010 Central Administration ▸ Backup and Restore   

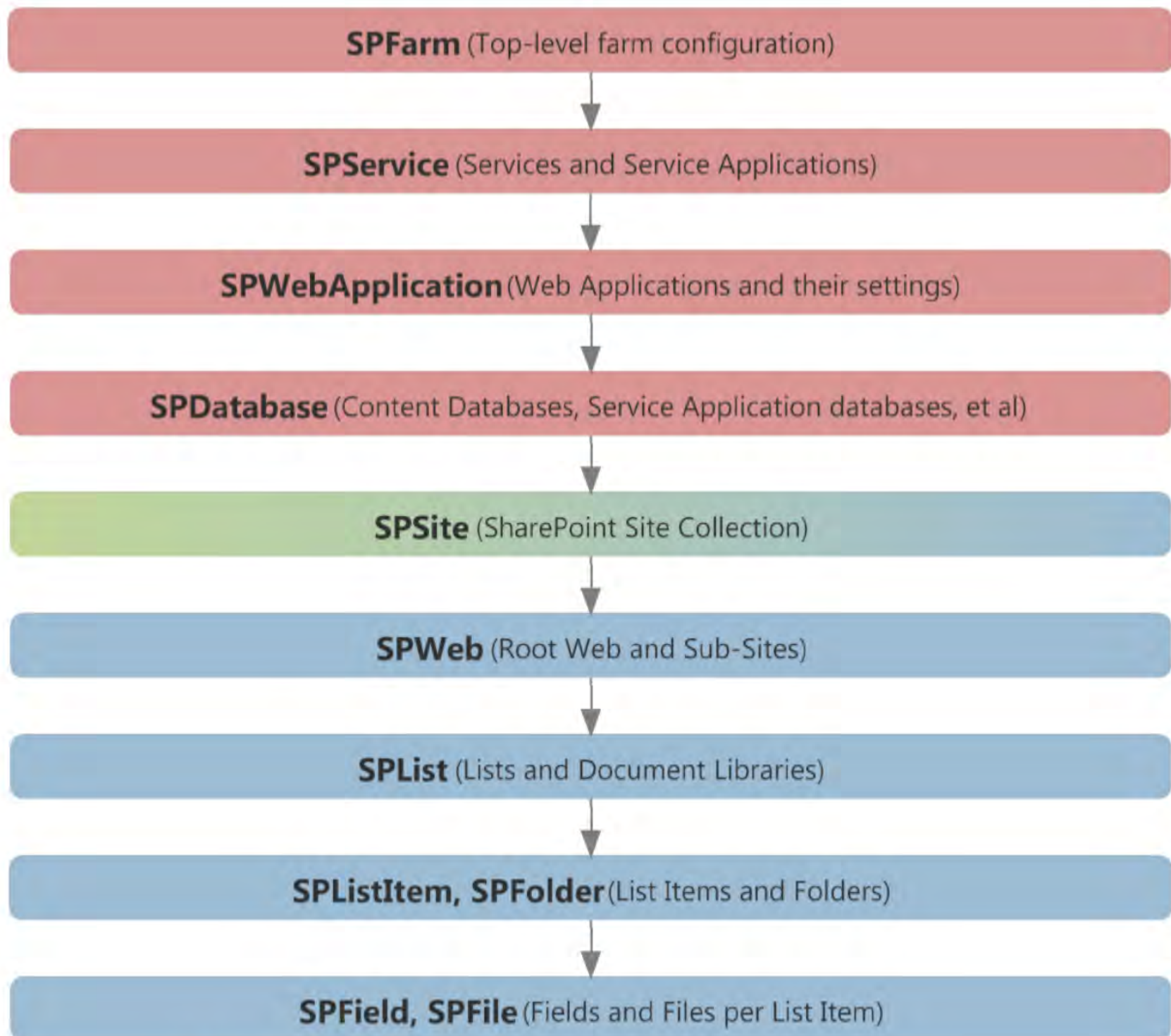
**Central Administration**  
Application Management  
System Settings  
Monitoring  
**Backup and Restore**  
Security  
Upgrade and Migration  
General Application Settings  
Configuration Wizards

 **Farm Backup and Restore**  
[Perform a backup](#) | [Restore from a backup](#) | [Configure backup settings](#) |  
[View backup and restore history](#) | [Check backup and restore job status](#)

 **Granular Backup**  
[Perform a site collection backup](#) | [Export a site or list](#) |  
[Recover data from an unattached content database](#) |  
[Check granular backup job status](#)

## Backup and Restore in Central Administration





# "Catastrophic" farm protection

- Backup-SPFarm
- Backup-SPConfigurationDatabase
- Restore-SPFarm
- STSADM -o backup with -filename specified



**SPFarm** (Top-level farm configuration)



**SPService** (Services and Service Applications)



**SPWebApplication** (Web Applications and their settings)



**SPDatabase** (Content Databases, Service Application databases, et al)



SQL Server Database  
backups can also be  
used to great effect  
here



## "Catastrophic"

- Backup-SPFarm
- Backup-SPConfigurat
- Restore-SPFarm
- STSADM -o backup w

**SPFarm** (Top-level)

**SPService** (Services)

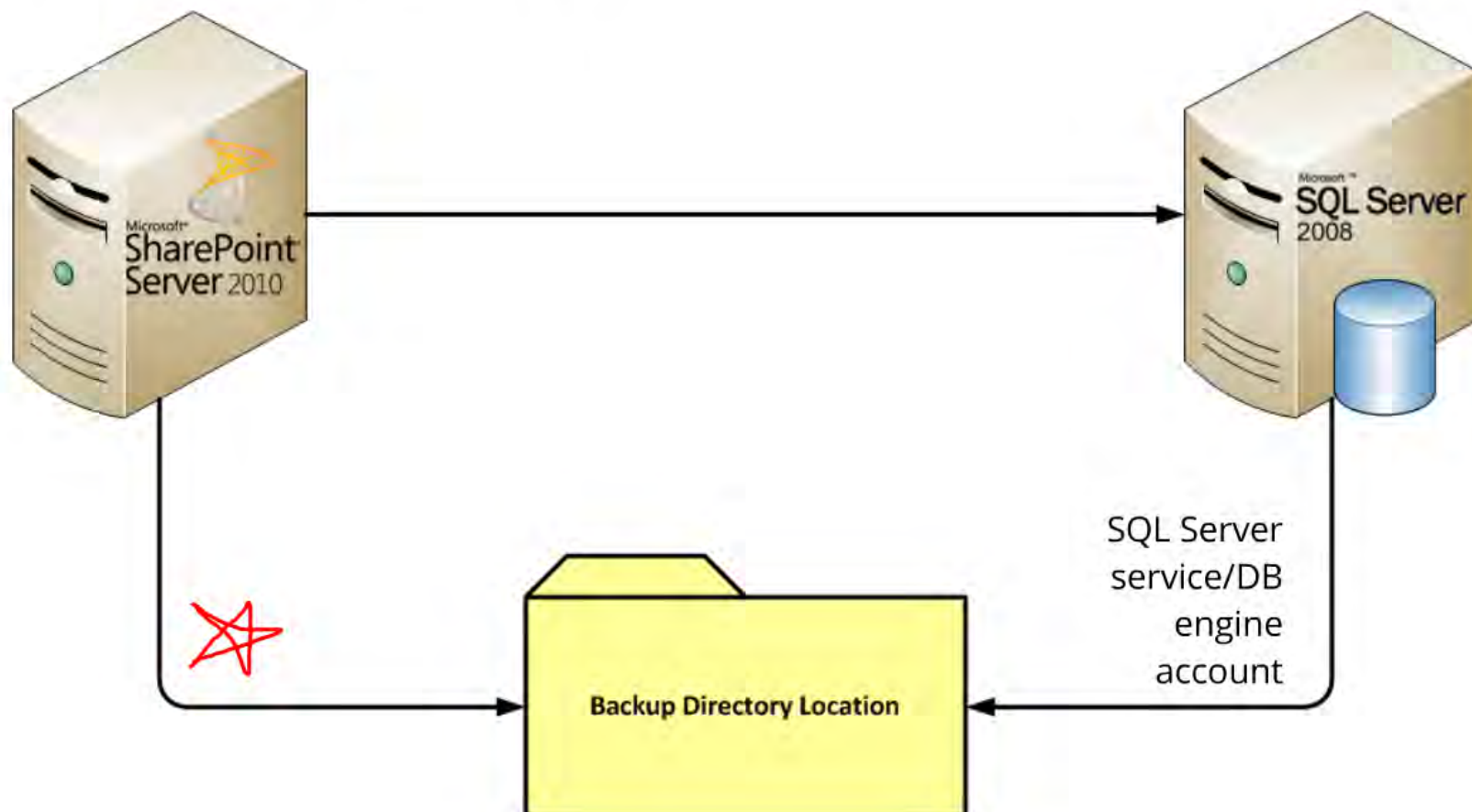
**SPWebApplication** (Web)

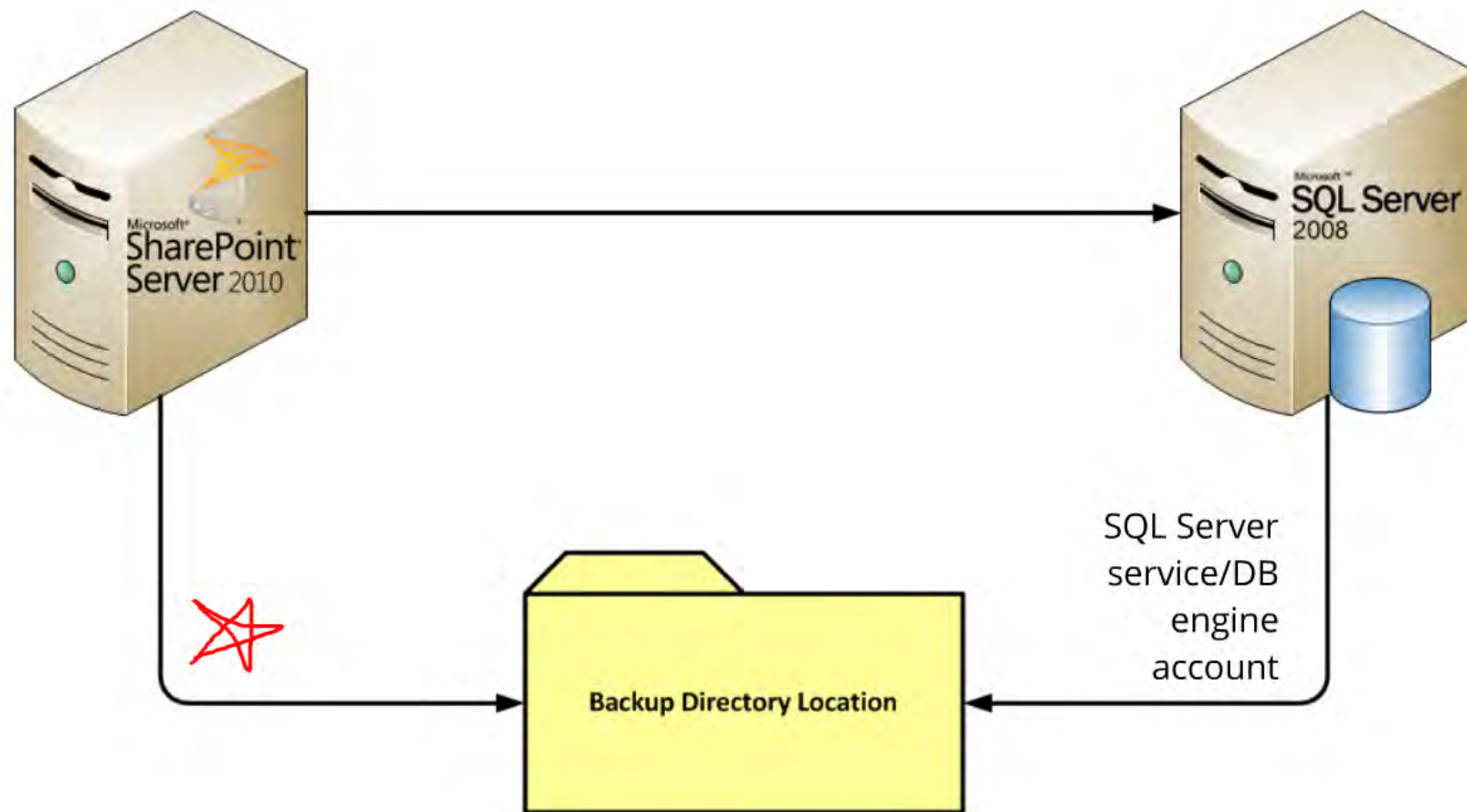
**SPDatabase** (Content Databases)



# Tips

- Understand the permissions you need before you begin





Central Admin

★ SharePoint  
Timer Service  
account context

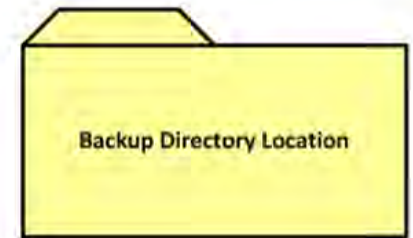
Command Line/PowerShell

★ Your account context! Make sure  
you've got rights. (e.g., through  
Add-SPShellAdmin)

Read/write access required for accounts

# Tips

- Your backup directory location needs to be a UNC path unless you're on a single server (SQL Server + SharePoint)



- Plan your storage! Backups will grow to consume all available disk space unless you somehow groom them ...
- For automated protection, you'll need Windows Task Scheduler



# Tips

- When need to do a restore, you'll need an operational SharePoint farm.

Somewhat counter-intuitive until you think through it ...

- Full farm is really only "full" from a SharePoint-centric view of the universe.

You still need protection for decentralized customizations, manual IIS changes, etc.

| Component                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Type                                                                                                                                                                                                                                                                                                                                                                                                                             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>MS10_PrmConfId</li> </ul> </li> <li>Infopath Forms Services           <ul style="list-style-type: none"> <li>Settings</li> <li>Data Connection</li> <li>Form Templates</li> </ul> </li> <li>Infopath Lists Agents           <ul style="list-style-type: none"> <li>State Service</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                         | Forms<br>Configuration Database<br>Service Settings and Content<br>Settings<br>Data Connections<br>Form Templates<br>Lists Lists Agents                                                                                                                                                                                                                                                                                          | Content and configuration data for the entire server farm.<br>Configuration data for the configuration forms.<br>Administrative approved content and templates for the server farm.<br>Settings<br>Administrative-approved data connection files.<br>Administrative-approved form templates.<br>The collection of user agents that receive Infopath forms instead of Web pages.<br>Service for storage of temporary state information used by various SharePoint Server features.                                                                                                                                                                                                                                         |
| <ul style="list-style-type: none"> <li>SharePoint Server State Service           <ul style="list-style-type: none"> <li>All State Service</li> </ul> </li> <li>Microsoft SharePoint Foundation Web Application           <ul style="list-style-type: none"> <li>ApplicationContentId</li> <li>FormWebId</li> <li>MSF_Administration</li> <li>SharePoint Central Administration v4</li> </ul> </li> <li>SharePoint Server State Service Proxy           <ul style="list-style-type: none"> <li>State Service</li> </ul> </li> <li>OtherAddOn           <ul style="list-style-type: none"> <li>Admin - Installation Group</li> <li>Searchable Content List Database Provider using Provider</li> <li>Resource Measures Group</li> <li>Resource Tags Group</li> </ul> </li> </ul> | State Service<br>State Service Application<br>Microsoft SharePoint Foundation Web Application<br>Web Application<br>Web Application<br>Central Administration Web Application<br>State Service Proxy<br>State Service Application<br>Microsoft SharePoint Foundation Searchable Content List Database Provider<br>Resource Group<br>Searchable Content List Database Provider using Provider<br>Resource Group<br>Resource Group | Collection of Web Applications<br>Content and configuration data for this Web application.<br>Content and configuration data for this Web application.<br>Central Administration Web Application<br>Content and configuration data for this Web application.<br>State Service<br>State Service Application<br>Microsoft SharePoint Foundation Searchable Content List Database Provider<br>Settings for the SharePoint List Database.<br>Collection of components grouped together for backup and restore.<br>Collection of components grouped together for backup and restore.<br>Collection of components grouped together for backup and restore.<br>Collection of components grouped together for backup and restore. |
| Microsoft SharePoint Server Diagnostic Services<br>Application Search Settings<br>Global Search Settings<br>Microsoft Office Web App Diagnostic Service<br>Microsoft SQL Server Reporting Services Diagnostic Service<br>Microsoft SharePoint Foundation Diagnostic Service<br>Share Services<br>Project Services Application<br>Project Services Provision                                                                                                                                                                                                                                                                                                                                                                                                                    | Microsoft SharePoint Server Diagnostic Service<br>Microsoft Search Service<br>Microsoft Office Web App Diagnostic Service<br>Microsoft SQL Server Reporting Services Diagnostic Service<br>Microsoft SharePoint Foundation Diagnostic Service<br>Share Services<br>Project Services Application<br>Project Services Provision                                                                                                    | Settings for the diagnostic services.<br>Settings for the diagnostic services.<br>Global search settings for the farm.<br>Background compatible Business Data Connectivity (BDC) settings for the diagnostic services.<br>Settings for the diagnostic services.<br>Settings for the diagnostic services.<br>Share services of the server farm.<br>Project Services Application of the server farm.<br>Project Services Application of the server farm.                                                                                                                                                                                                                                                                    |

| Component                                                   | Type                                                        | Description                                                                                    |
|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| [-] Farm                                                    | Farm                                                        | Content and configuration data for the entire server farm.                                     |
| SP2010_FarmConfig                                           | Configuration Database                                      | Configuration data for the entire server farm.                                                 |
| [-] InfoPath Forms Services                                 | Server Settings and Content                                 | Administrator-approved content and settings for the server farm.                               |
| Settings                                                    | Settings                                                    | Settings                                                                                       |
| Data Connections                                            | Data Connections                                            | Administrator-approved data connection files.                                                  |
| Form Templates                                              | Form Templates                                              | Administrator-approved form templates.                                                         |
| [-] Exempt User Agents                                      | Exempt User Agents                                          | The collection of user agents that receive InfoPath forms instead of Web pages.                |
| [-] SharePoint Server State Service                         | State Service                                               | Service for storage of temporary state information used by various SharePoint Server features. |
| [-] State Service                                           | State Service Application                                   |                                                                                                |
| [-] Microsoft SharePoint Foundation Web Application         | Microsoft SharePoint Foundation Web Application             | Collection of Web Applications                                                                 |
| [-] MySiteHostWebApp                                        | Web Application                                             | Content and configuration data for this Web application.                                       |
| [-] PortalWebApp                                            | Web Application                                             | Content and configuration data for this Web application.                                       |
| [-] WSS_Administration                                      | Central Administration                                      | Collection of Web Applications                                                                 |
| [-] SharePoint Central Administration v4                    | Web Application                                             | Content and configuration data for this Web application.                                       |
| [-] SharePoint Server State Service Proxy                   | State Service Proxy                                         |                                                                                                |
| State Service                                               | State Service Application Proxy                             |                                                                                                |
| [-] SPUserCodeV4                                            | Microsoft SharePoint Foundation Sandboxed Code Service      | Settings for the Sandboxed Code Service.                                                       |
| [Solution Validators Group.]                                | Backup Group                                                | Collection of components grouped together for backup and restore.                              |
| Sandboxed Code Load Balancer Provider using Popularity      | Sandboxed Code Load Balancer Provider using Popularity      |                                                                                                |
| [Resource Measures Group.]                                  | Backup Group                                                | Collection of components grouped together for backup and restore.                              |
| [Execution Tiers Group.]                                    | Backup Group                                                | Collection of components grouped together for backup and restore.                              |
| Microsoft SharePoint Server Diagnostics Service             | Microsoft SharePoint Server Diagnostics Service             | Settings for the diagnostics service.                                                          |
| Global Search Settings                                      | Search object in configuration database                     | Crawler impact rules for the farm                                                              |
| Application Registry Service                                | Application Registry Service                                | Backwards compatible Business Data Connectivity API.                                           |
| Microsoft Office Web Apps Diagnostics Service               | Microsoft Office Web Apps Diagnostics Service               | Settings for the diagnostics service.                                                          |
| Microsoft SQL Server Reporting Services Diagnostics Service | Microsoft SQL Server Reporting Services Diagnostics Service | Settings for the diagnostics service.                                                          |
| Microsoft SharePoint Foundation Diagnostics Service         | Microsoft SharePoint Foundation Diagnostics Service         | Settings for the diagnostics service.                                                          |
| [-] Shared Services                                         | Shared Services                                             | Shared Services of the server farm.                                                            |
| [-] Shared Services Applications                            | Shared Services Applications                                | Shared Services Applications of the server farm.                                               |
| [-] Shared Services Proxies                                 | Shared Services Proxies                                     | Shared Services Applications of the server farm.                                               |



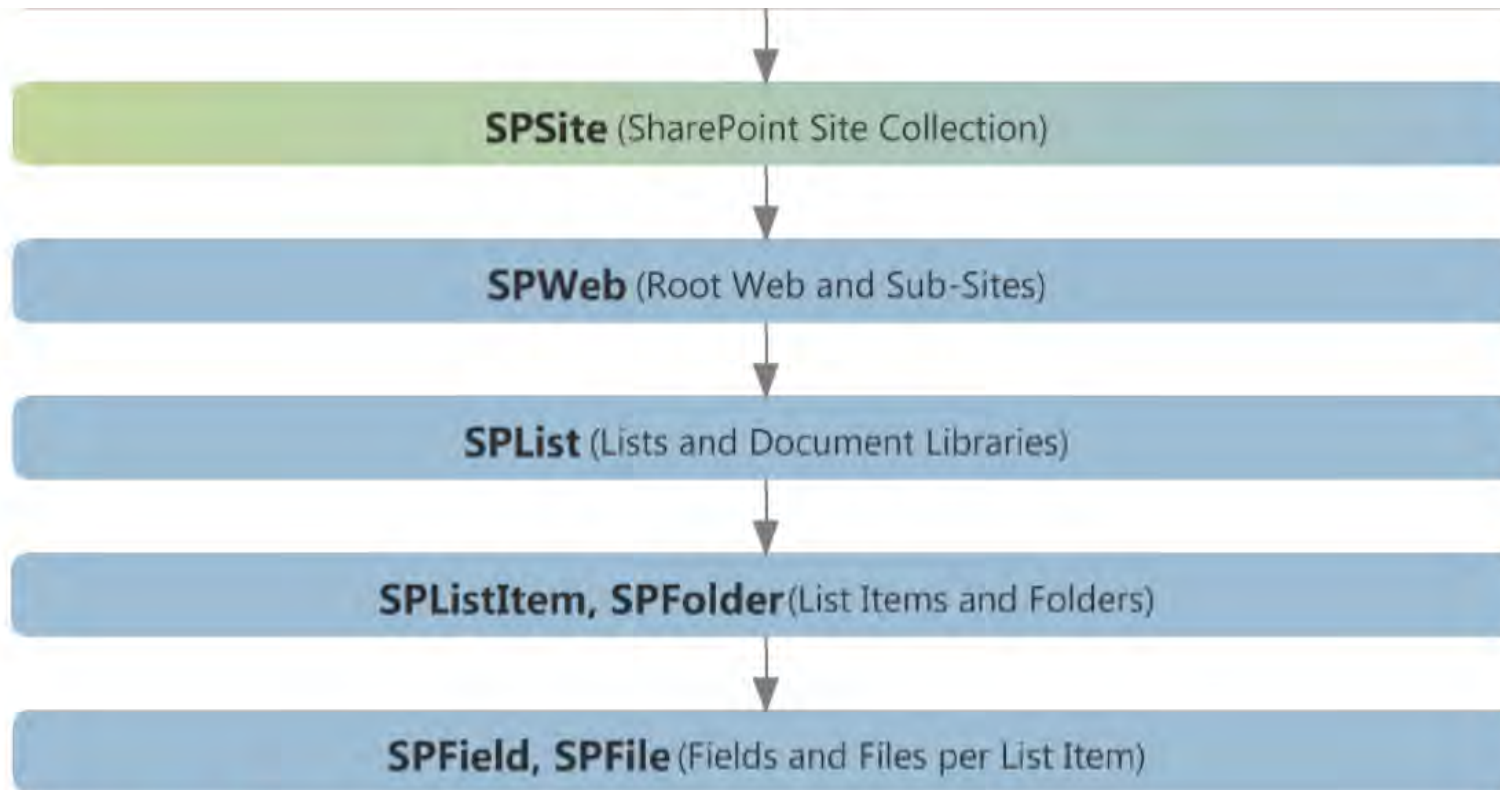
# Demo

"The Treasure Trove  
of Lost Goodness"



- Restore a Web Application (+ DBs)
- Watch the moving parts





**Content export (via the Content Deployment API aka PRIME API)**

- Export-SPWeb
- Import-SPWeb
- STSADM -o export
- STSADM -o import

# Tips

- You (or Timer Service account) require access to export/import location
- Do you have SQL Server Enterprise?  
Consider the -UseSqlSnapshot switch
- Imports must be done from the command line, but Exports can be done in Central Admin (much easier)

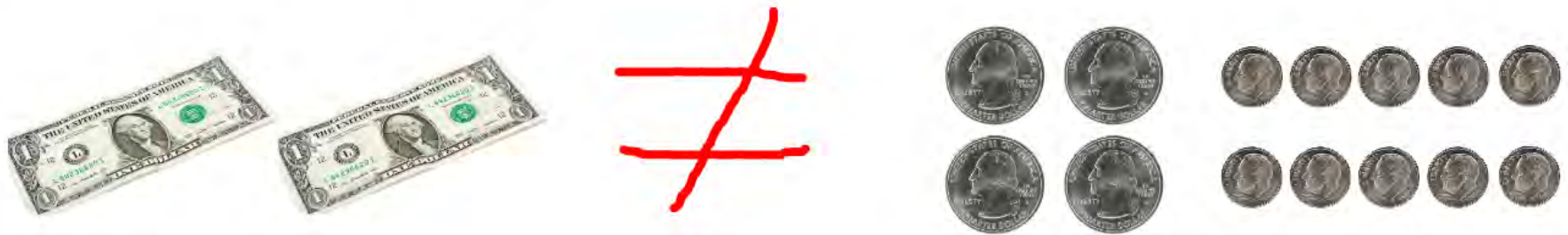
# Tips

- Unattached database recovery is your friend: use it (via Central Administration)
- Publishing sites cause problems for some export/import operations.
- Be careful if you are importing into a (sub-) site that is based on a template that is different from the source (export) site or sub-site



# Remember

- Content deployment is an export process



## What you lose:

- alerts
- audit trails
- change log history
- recycle-bin items
- workflow tasks/state
- ...

# Demo

"The Treasure Trove  
of Lost Goodness"



- Perform a content export
- Restore a SQL database (SQL Server)
- Use unattached database recovery
- Import a content migration package

# Site Collection backup

- Backup-SPSite
- Restore-SPSite
- STSADM -o backup with -url specified



**SPService** (Service)

**SPWebApplication** (Web Application)

**SPDatabase** (Content Database)

**SPSite** (Site)

**SPWeb** (Web)

**SPList** (List)

**SPListItem, SPListItem**

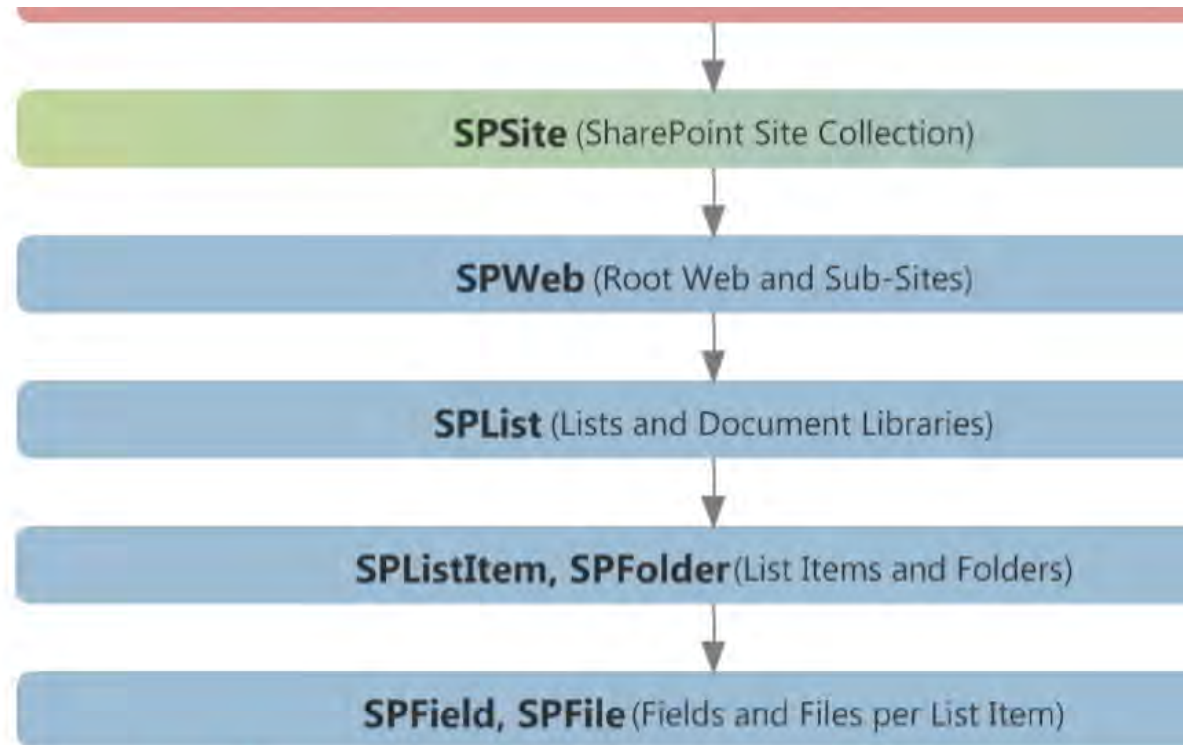
**SPField, SPFile**



# Site Collection backup

- Backup-SPSite
- Restore-SPSite
- STSADM -o backup with -url specified

Yes, site collections can be both backed-up and exported.



Content export (via the Content Deployment API aka PRIME API)

# Tips

- Stay away from the -NoSiteLock switch
- Do you have SQL Server Enterprise?  
Consider the -UseSqlSnapshot switch
- The recycle bin and gradual site deletion jobs can impact your restore operations
- GUID collisions happen. It's okay; create another database to restore to the same (source) Web Application

# Demo

"The Treasure Trove  
of Lost Goodness"



- Perform a site collection backup
- Execute a site collection restore

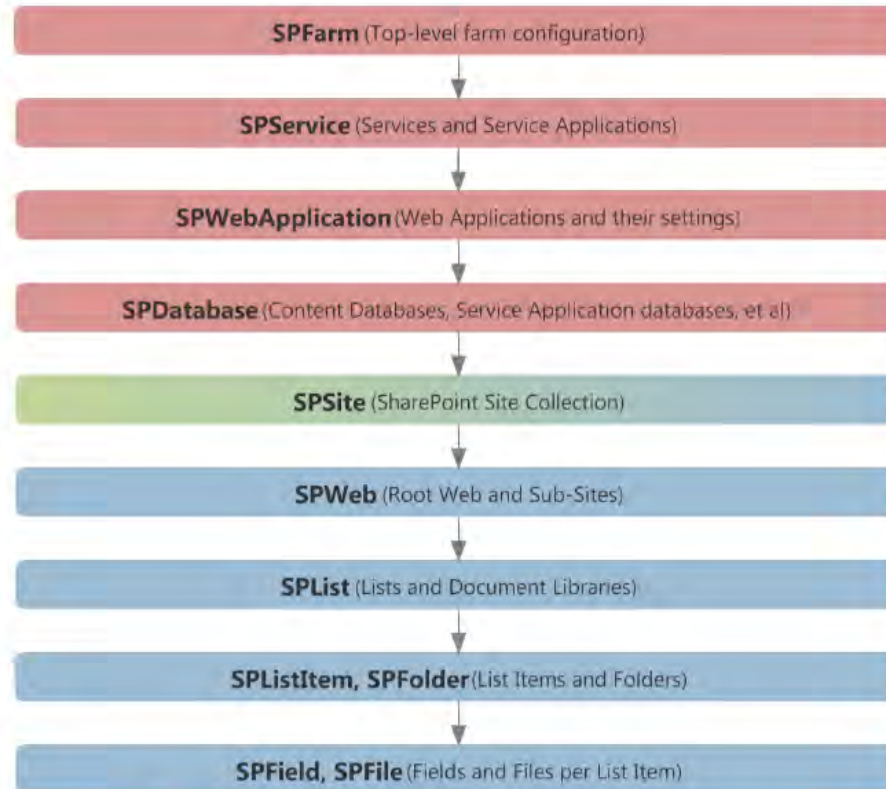


SQL Server Database backups can also be used to great effect here

## "Catastrophic" farm protection

- Backup-SPFarm
- Backup-SPConfigurationDatabase
- Restore-SPFarm
- STSADM -o backup with -filename specified

Backup and export  
"cheat sheet"



## Site Collection backup

- Backup-SPSite
- Restore-SPSite
- STSADM -o backup with -url specified

Yes, site collections can be both backed-up and exported.

## Content export (via the Content Deployment API aka PRIME API)

- Export-SPWeb
- Import-SPWeb
- STSADM -o export
- STSADM -o import



# A Few Free Tools

(to give you some additional options)

- \* John Ferringer's farm backup script
- \* My SharePoint backup augmentation cmdlets
- \* Chris O'Brien's content deployment wizard

(links in "Resources" at end of presentation)



# John Ferringer's Farm Backup (PowerShell) Script

```
<#
.SYNOPSIS
    Backs up a SharePoint farm on a scheduled basis.

.DESCRIPTION
    At its core, the BackupSharePoint script backs up a SharePoint farm. As a
    scheduled task, it generates a full farm backup once a week. It also
    deletes the oldest backup if there are more than 14 backups. It also
    manages the backup storage.

.PARAMETER
    -drive <string[]>
        Indicates the drive letter of the server where the script is
        also assumes this drive also hosts the shared directory.
    -backupDir <string[]>
        The shared UNC path for your backups to be stored in.
        Example: \\<YOUR SHAREPOINT SERVER>\<YOUR BACKUP FOLDER>
    -fullBackupDay <string[]>
        The day that a full backup should be run on.
        Example: "Sunday"
    -configDBInstance <string[]>
        The SQL Server Database Server and Instance name host the
        configuration database. Example: "<YOUR SQL SERVER>\<INSTANCE>"
    -configDBName <string[]>
        The name of the farm's SharePoint configuration database.
        Example: "<YOUR CONFIG DB>"
    -nbrDaysRetained <string[]>
        The number of days that backups should be retained.
    -Computer <string[]>
        The name of the computer the script is being run on.
        will default to the local computer name environment variable.

.EXAMPLE
    ----- EXAMPLE 1 -----
    .\BackupSharePoint.ps1 -drive "C:" -backupDir "\\server\backups"
    -fullBackupDay "Sunday" -configDBInstance sql\sql01 -configDBName
    -nbrDaysRetained 14

This command generates a backup of a SharePoint 2010 environment.
to be run as a Scheduled Task. To run the backup to run.
```

- Great as-is or as a starting point for your own farm protection script
- Works for SharePoint 2007 and SharePoint 2010
- Includes backup directory rotation to avoid complete consumption of all available storage space



# SharePoint Backup Augmentation Cmdlets for PowerShell (SharePointBAC)

```
Administrator: SharePoint 2010 Management Shell
PS C:\Users\s01render> Get-SPBackupCatalog

CatalogPath           : \\sculptedsystem.com\Network Files\Backup\2010 Farm
CatalogSize            : 102628388035
DifferentialBackupCount : 33
FullBackupCount        : 6
IsValidCatalog         : True
LastBackupErrorCount    : 0
LastBackupDuration      : 00:10:10
LastBackupFinish        : 6/26/2012 3:48:33 AM
LastBackupMethod        : Differential
LastBackupPath          : \\sculptedsystem.com\Network Files\Backup\2010 Farm\
                          spbr00ED\
LastBackupRequestor     : 
LastBackupSize          : 1431181434
LastBackupStart         : 6/26/2012 3:30:15 AM
LastBackupTopComponent  : Farm
LastBackupWarningCount  : 0
SizePercentageOfLastFull : 15.93

PS C:\Users\s01render> _
```

Extends OOTB backup with new cmdlets to support backup set grooming, status emails, and more

## SharePoint Status Report: Last Backup

The following summary was generated at 11:50 PM on Tuesday, June 26, 2012

### General Backup Information

|                     |                                                               |
|---------------------|---------------------------------------------------------------|
| Backup Set Location | \\sculptedsystem.com\Network Files\Backup\2010 Farm\spbr00EC\ |
| Top Component       | Farm                                                          |
| Backup Method       | Differential                                                  |
| Requested By        |                                                               |

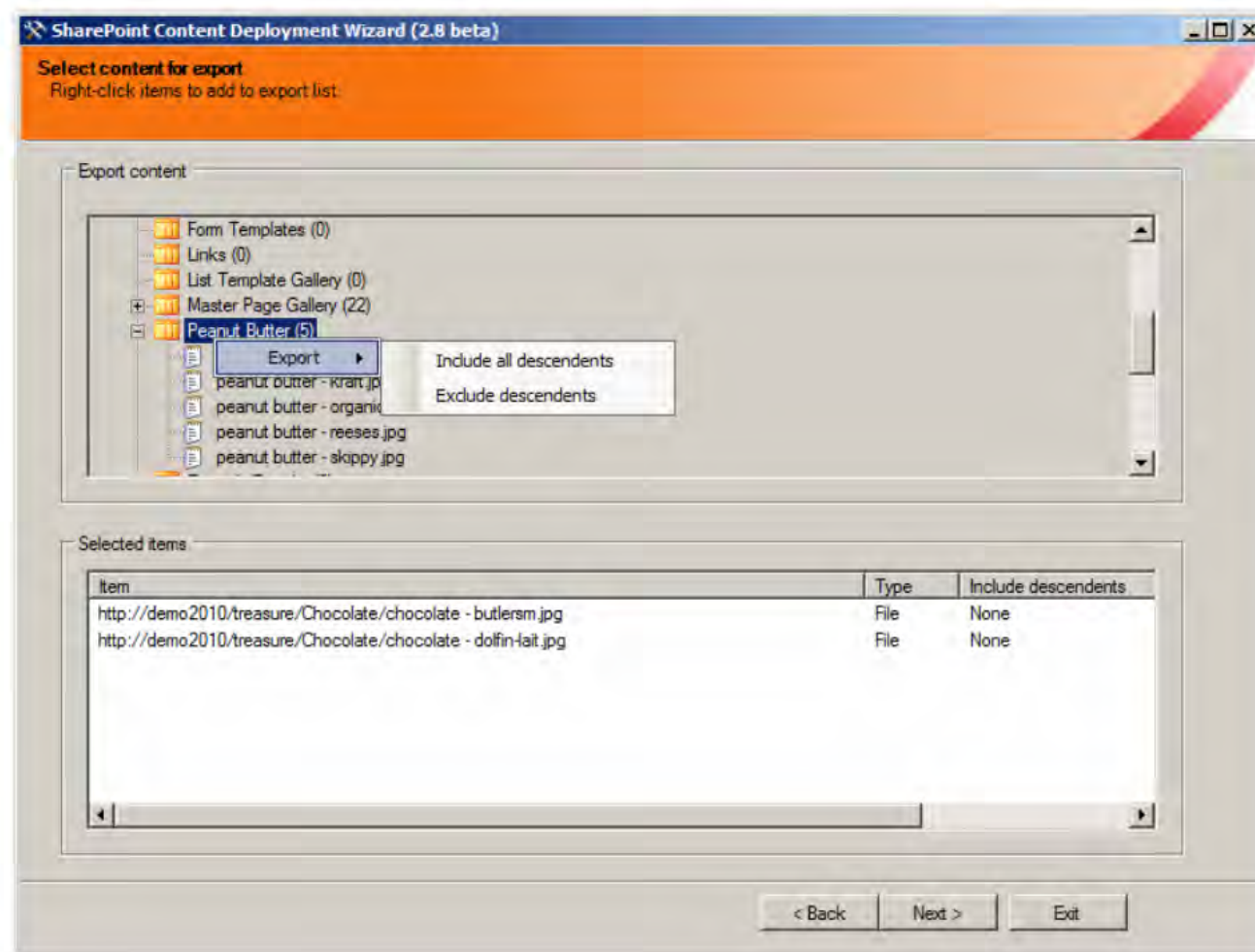
### Backup Execution Details

|                  |                                                            |
|------------------|------------------------------------------------------------|
| Backup Initiated | 11:30 PM on Tuesday, June 26, 2012 (Eastern Daylight Time) |
| Backup Completed | 11:50 PM on Tuesday, June 26, 2012 (Eastern Daylight Time) |
| Duration         | 19 minutes and 55 seconds                                  |
| Backup Set Size  | 1.32 GB                                                    |
| Errors           | 0                                                          |
| Warnings         | 0                                                          |

- Get-SPBackupCatalog
- Export-SPBackupCatalog
- Remove-SPBackupCatalog
- Send-SPBackupStatus
- Set-SPBackupCatalog

# Chris O'Brien's Content Deployment Wizard

Provides significantly enhanced content export and import functionality in an easy-to-use UI



# Resources

Backup and recovery overview (SharePoint Server 2010)

- <http://technet.microsoft.com/en-us/library/ee663490>

Configuration-Only Backup and Restore in SharePoint 2010

- <http://sharepointinterface.com/2010/09/10/configuration-only-backup-and-restore-in-sharepoint-2010/>

A Tale of Two Cmdlets

- <http://sharepointinterface.com/2010/10/03/a-tale-of-two-cmdlets/>

Scheduling SQL backups for SharePoint

- <http://www.toddklindt.com/blog/Lists/Posts/Post.aspx?ID=248>

Limitations of STSADM -o export/import related to publishing sites

- [http://blogs.technet.com/b/stefan\\_gossner/archive/2009/05/27/limitations-of-stsadm-o-export-import-related-to-publishing-sites.aspx](http://blogs.technet.com/b/stefan_gossner/archive/2009/05/27/limitations-of-stsadm-o-export-import-related-to-publishing-sites.aspx)



# Resources

## Gradual Site Collection Deletion

- <http://reality-tech.com/2012/04/04/gradual-site-collection-deletion/>

## The Importance of Consistency when Creating SharePoint Backups

- <http://www.idera.com/Downloads/ProdCollateral/Consistency-Creating-SharePoint-Backups.pdf>

## Use PowerShell to Back Up Your SharePoint Farm

- <http://blogs.technet.com/b/heyscriptingguy/archive/2011/06/22/use-powershell-to-back-up-your-sharepoint-farm.aspx>

## SharePoint Backup Augmentation Cmdlets (SharePointBAC)

- <http://sharepointbac.codeplex.com/>

## SharePoint Content Deployment Wizard

- <http://spdeploymentwizard.codeplex.com/>



# Sean P. McDonough

Blog: <http://SharePointInterface.com>

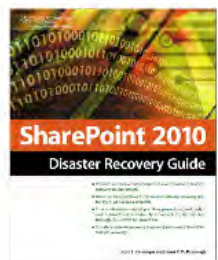
Email: [sean@SharePointInterface.com](mailto:sean@SharePointInterface.com)

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

Twitter: @spmcdonough



**SharePoint 2007 Disaster Recovery Guide**  
<http://tinyurl.com/SPDRGuide2007>



**SharePoint 2010 Disaster Recovery Guide**  
<http://tinyurl.com/SPDRGuide2010>