

Using SharePoint search to develop custom solutions

DEV105

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About Mirjam



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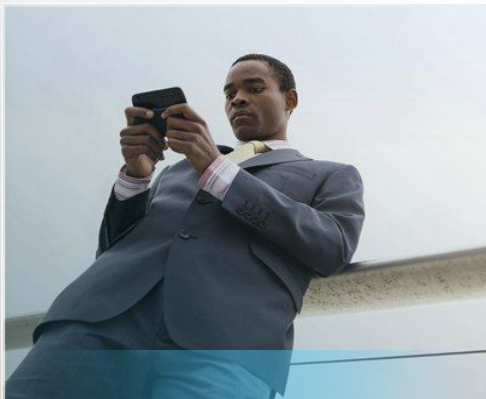
Agenda

- ▶ Improvements in SharePoint 2010 Search
- ▶ Customise Search using the UI
- ▶ Extend OOB Search Web Parts
- ▶ Creating custom Search Solutions
- ▶ Using PowerShell for SharePoint Search

▶ Introduction

IMPROVEMENTS IN SHAREPOINT 2010 SEARCH

Main investment areas



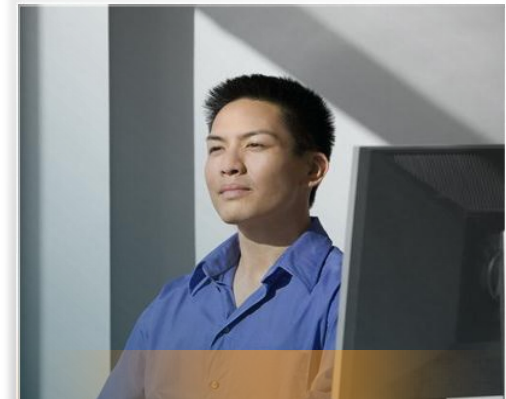
End User

Go beyond the
search box



IT Professional

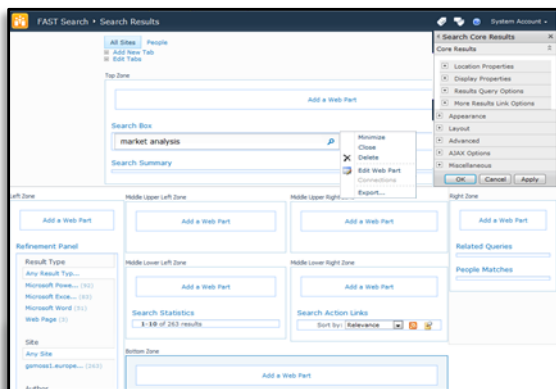
Eliminate
compromise



Developer

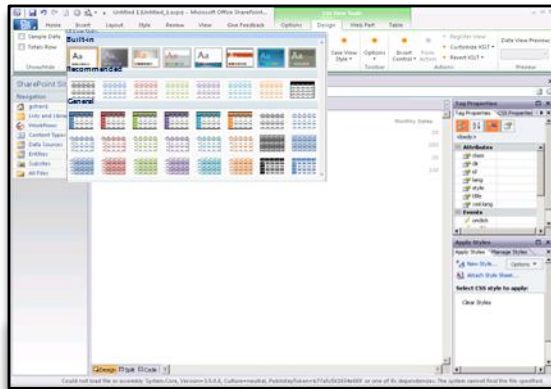
Do more
with search

Do More with Search



Configure

Solutions that previously required code



Extend

Enhancements made more rapidly with unified APIs



Create

Bold, search-driven applications



SharePoint 2010 Search

- ▶ Enterprise Scale-out
- ▶ Full reporting on search
- ▶ Public web parts
- ▶ New connector framework
 - Full set of OOB connectors
 - Easy to add new data sources via BCS
- ▶ PowerShell support

- ▶ Adjusting the search user interface without custom code

CUSTOMISE THE SEARCH UI

Customise Search using the UI

- ▶ Edit the pages in the search center
- ▶ Add your own scopes and tabs
- ▶ Scopes can be based on
 - Web Address
(<http://portal.sharepoint.com/sites/evolution>)
 - Managed Property (author = mirjam)
 - Content Source

Customise Search using the UI

- ▶ Customise results to highlight metadata that matters
- ▶ Change web part properties – no code
 - Modify XSLT
 - Modify config XML
 - Refinement panel – control metadata available for refinement
 - Advanced search – control metadata available for advanced search queries

Get raw search results XML

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

  <xsl:output method="xml" version="1.0" encoding="UTF-8" indent="yes"/>

  <xsl:template match="/">
    <xsl:copy-of select="*" />
  </xsl:template>

</xsl:stylesheet>
```

```
<?xml version="1.0" encoding="utf-8"?>
<All_Results>
  <Result>
    <id>1</id>
    <workid>858</workid>
    <rank>73216292</rank>
    <title>Opportunity Management</title>
    <author_multival>System Account</author_multival>
    <author_multival>Ryan</author_multival>
    <author>System Account;Ryan</author>
    <confidentiality>All Audiences</confidentiality>
    <size>412558</size>
    <url>http://portal.sharepoint.com/sites/EcmAllUp/Docs/Documents/XJ7000 Sales Flyer.docx</url>
    <urlEncoded>http%3A%2F%2Fportal%2Esharepoint%2Ecom%2Fsites%2FEcmAllUp%2FDocs%2FDocuments%2FXJ7000%20Sales%20Flyer%2Edocx</urlEncoded>
    <description></description>
    <write>11/4/2009</write>
    <sitename>http://portal.sharepoint.com/sites/EcmAllUp/Docs/Documents</sitename>
    <collapsingstatus>1</collapsingstatus>
    <hithighlightedsummary> A major portion of a <c0>sales</c0> representative's world revolves around pursuing leads a
    <withhighlightedproperties>
```

Add XML as datasource





The screenshot displays the SharePoint 2010 user interface. At the top, the ribbon includes tabs for 'Data Views & Forms' and 'Controls'. The 'Data Views & Forms' tab is active, showing options like 'New Item Form', 'Edit Item Form', and 'Display Item Form'. The 'Controls' tab shows 'HTML', 'ASP.NET', and 'SharePoint' options. A 'Data Source' button is highlighted in the ribbon. Below the ribbon, the 'Data Source Details' pane is open, showing 'Current Data Source: Data source properties...'. The 'All Results' list is visible, with columns for 'id', 'workid', 'rank', 'title', 'author_multival', 'author', 'confidentiality', 'size', 'url', 'urlEncoded', and 'description'. The 'url' column contains a long URL. The 'Data Source Details' pane shows the path 'Portal > Site Pages > SPEvoDemo.aspx' and the data source name 'SPXmlDataSource - SPXmlDataSource1'. A dropdown menu is open, showing 'All Data Sources' with categories like 'Workflow Tasks', 'Document Libraries', and 'XML Files'. The 'XML Files' category is expanded, showing 'results.xml' and a 'More Data Sources...' link.

Adjust results in SPD

Portal > Site Pages > SearchResults.aspx > Advanced Editor

```
32 <ParameterBinding Name="UserID" Location="CAMLVariable" DefaultValue="CurrentUserName"/>
33 <ParameterBinding Name="Today" Location="CAMLVariable" DefaultValue="CurrentDate"/>
34 </ParameterBindings>
35 <DataFields>id;workid;rank;title;author_multival;author;confidentiality;size;url;urlEncoded;description;write;sitename;coll
36 <Xsl>
37 <xsl:stylesheet version="1.0" exclude-result-prefixes="xsl msxsl ddwrt" xmlns:ddwrt="http://schemas.microsoft.com/WebParts/
38 <xsl:output method="html" indent="no"/>
39 <xsl:decimal-format NaN=""/>
40 <xsl:param name="dvt_apos">'</xsl:param>
41 <xsl:param name="ManualRefresh"></xsl:param>
42 <xsl:param name="FileName" />
43 <xsl:variable name="dvt_1_automode">0</xsl:variable>
44
45 <xsl:template match="/" xmlns:asp="http://schemas.microsoft.com/ASPNET/20" xmlns:__designer="http://schemas.microsoft.c
46 <xsl:choose>
```

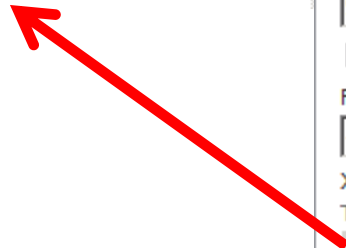
ScriptManager - ScriptManager

	Title: Opportunity Management Author: System Account Ryan Confidentiality: All Audiences		Title: The Vulcan Author: Tai Lee Confidentiality:
	Title: LOB Connectivity Customization for Ofx Author: System Account Thomas Coon Confidentiality:		Title: Opportunity Management Author: System Account Sangya Singh Confidentiality: Internal Only - All FTEs

Copy SPD XSLT to Web Part

```
Text Editor -- Webpage Dialog
</xsl:if>
</table>
</td>
<xsl:if test="position() mod 2 = 0" ddwrt:cf_igno
re="1">
<xsl:text disable-output-escaping="yes">&
lt;/tr&gt;</xsl:text>
<xsl:if test="position() != last()" ddwr
t:cf_ignore="1">
<xsl:text disable-output-escaping
="yes">&lt;tr&gt;</xsl:text>
</xsl:if>
</xsl:if>
<xsl:if test="position() = last()" ddwrt:cf_ignor
e="1">
<xsl:if test="position() mod 2 != 0" ddwr
t:cf_ignore="1">
```

```
<xsl:stylesheet>
....
</xsl:stylesheet>
```



Search Core Results

Core Results

- + Location Properties
- Display Properties

Default Results Sorting

Relevance

Results Per Page

30

Limit Characters In Summary

Characters In Summary

185

Limit Characters In URL

Characters In URL

90

Use Location Visualization

Fetches Properties

<Columns> <Column Nar

XSL Editor

To add XSL, click **XSL Editor**.

XSL Editor...

Parameters Editor

To change parameters, click **Parameters Editor**.

Parameters Editor...



All Sites People Business Data **Sales**

gear

- Result Type
 - Any Result Type
- Word
 - PowerPoint
- Site
 - Any Site
 - portal.sharepoint...
- Author
 - Any Author
 - System Account
 - Ryan
 - Tai Lee
 - Thomas Coon
 - show more ▾
- Modified Date
 - Any Modified Date
 - Past Six Months

1-9 of 9 results



	Title: Opportunity Management Author: System Account Contoso Administrator Confidentiality: Internal Only - All FTEs		Title: Opportunity Management Author: System Account Sangya Singh Confidentiality: Internal Only - All FTEs
	Title: XJ3000 Gear Announced Author: System Account Ryan Confidentiality:		Title: XJ2000 Gear Announced Author: System Account Ryan Confidentiality: All Audiences
	Title: XJ3000 Gear Announced Author: System Account Ryan Confidentiality: All Audiences		Title: XJ2000 Gear Announced Author: System Account Ryan Confidentiality: All Audiences
	Title: The Vulcan Author: Tai Lee Confidentiality: All Audiences		Title: Contoso Plus Trey Beating the Competition Author: Tai Lee Confidentiality: All Audiences
	Title: LOB Connectivity Customization for Ofx Author: System Account Thomas Coon Confidentiality:		



EXTEND THE OOB SEARCH WEB PARTS

All web parts are public

But some web parts are more public than others

Web Part	MOSS 2007	SP2010
AdvancedSearchBox	Sealed	Sealed
CoreResultsWebPart	Unsealed	Unsealed
FederatedResultsWebPart	Unsealed	Unsealed
HighConfidenceWebPart	Sealed	Sealed
PeopleCoreResultsWebPart	Sealed	Sealed
PeopleRefinementWebPart		Unsealed
QuerySuggestionsWebPart		Unsealed
RefinementWebPart		Unsealed
SearchPagingWebPart	Sealed	Sealed
SearchStatsWebPart	Sealed	Sealed
SearchSummaryWebPart	Sealed	Sealed
TopFederatedResultsWebPart	Unsealed	Unsealed

SharedQueryManager class

- ▶ All search web parts use SharedQueryManager class
- ▶ One shared instance of the SharedQueryManager per search page
- ▶ At least one search results web part needs to be on the page
- ▶ Use SharedQueryManager to access other classes of the Federation Object Model

SharedQueryManager.GetInstance(this.Page).QueryManager

LocationList Members



Methods

	Name	Description
	<code>AggregateResults</code>	Returns all the search results from the first federated location specified in the <code>LocationList</code> object.
	<code>Close</code>	Releases the resources for the federated locations.
	<code>Dispose</code>	Releases the resources for the federated locations.

Properties

	Name	Description
	<code>ItemsPerPage</code>	Gets or sets the number of search results to display per page.
	<code>ReturnedResults</code>	Gets the number of search results returned for the query.
	<code>StartItem</code>	Gets or sets the number of the first item returned in the search results.
	<code>TotalResults</code>	Gets the total number of search results returned for the query.
	<code>TotalResultsIncludingDuplicates</code>	Gets the total number of search results returned for the query, including duplicate results.

Location Members

Methods



	Name	Description
	Close	Releases the resources for the federated location.
	Dispose	Releases the resources for the federated location.
	GetResults	Retrieves the search results from the federated location.




Properties

	Name	Description
	ItemsPerPage	Gets or sets the number of search results to display per page.
	ReturnedResults	Gets the number of search results returned for the query.
	SpellingSuggestion	Gets or sets an alternate spelling for a search term that is not recognized.
	StartItem	Gets or sets the number of the first item returned in the search results.
	TotalResults	Gets the total number of search results returned from the federated location for the query.
	TotalResultsIncludingDuplicates	Gets the total number of search results returned for the query, including duplicate results.
	TrimDuplicates	Gets or sets a Boolean value that specifies whether duplicate items should be removed from the search results.





CoreResultsWebPart Members



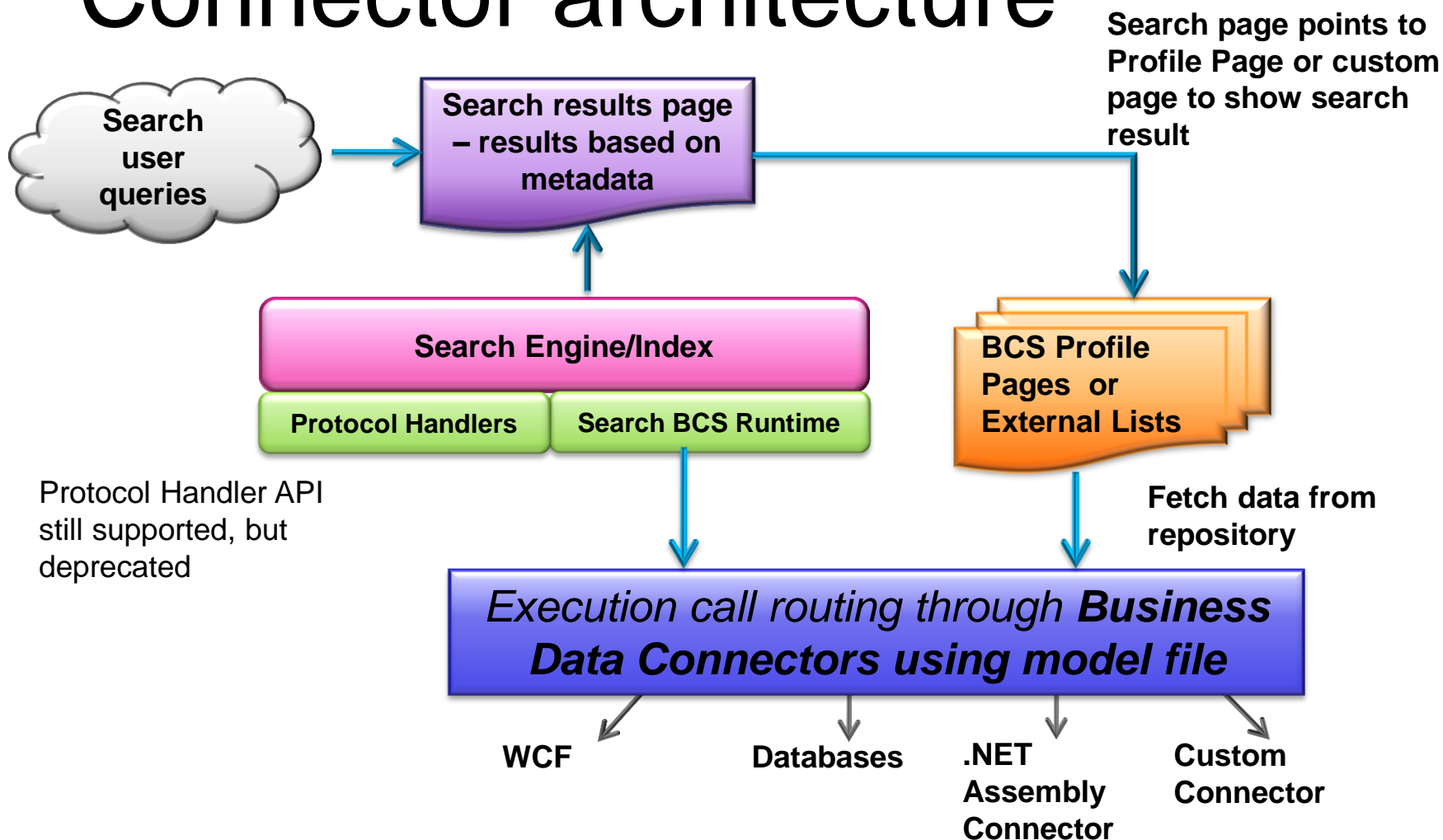
Methods

	Name	Description
	OnInit	Raises the Init event for the control. (Overrides SearchResultsBaseWebPart.OnInit(EventArgs) .)
	OnLoad	Raises the Load event for the Web Part. (Inherited from SearchResultsBaseWebPart .)
	OnPreRender	Raises the PreRender event that occurs immediately before the Web Part is rendered to its containing Web Part page. (Overrides SearchResultsBaseWebPart.OnPreRender(EventArgs) .)

Properties

	Name	Description
	DefaultSearchLocation	Gets the name of the default federated location. (Inherited from SearchResultsBaseWebPart .)
	Location	Gets or sets the location for the Core Results Web Part.
	ResultsPerPage	Gets or sets the number of rows to return for each search results page. (Inherited from SearchResultsBaseWebPart .)
	Scope	Gets or sets the name of the scope for the search results displayed in the CoreResultsWebPart Web Part.

Connector architecture



Demo

Demo

**EXTEND OUT-OF-THE-BOX
SEARCH WEB PARTS**



CREATE CUSTOM SOLUTIONS USING SHAREPOINT SEARCH

Administration Object Model

- ▶ Can be used for managing Search in your farm
- ▶ Represents Central Admin functions
- ▶ Use it to get `SearchServiceApplicationProxy`

Query Object Model

- ▶ Communicates with the Search Service Application for getting search results
- ▶ Be aware, use the SharePoint Server object model, not the SharePoint Foundation one

Microsoft.Office.Server.Search.Query

NOT

Microsoft.SharePoint.Search.Query

KeywordQuery

- ▶ Part of `Microsoft.Office.Server.Search.Query`
- ▶ Use Case
 - End User
 - Basic filtering
- ▶ Simple and easy to use
 - Avoids parsing and construction of SQL
 - Filter by any string or integer property

Keyword Syntax

- ▶ Support for Boolean operators
 - (“Taxi” OR “Train”) AND (Author:”John Cleese”)
- ▶ Prefix matching for keywords and properties
 - Micro* title:SharePoint*
- ▶ Improved operator support
 - = > >= < <=
- ▶ Scopes
 - scope:”business data”

FullTextSqlQuery

- ▶ Part of Microsoft.Office.Server.Search.Query
- ▶ Use Case
 - Advanced search solutions
 - Complex queries
- ▶ Similar to SQL queries, but not the same
 - Limited set of query terms can be used
 - Some fields need double quotes around them
 - Difficult to debug and troubleshoot

SharePoint SQL Syntax

- ▶ SELECT
- ▶ FROM SCOPE()
- ▶ WHERE
 - AND, OR, NOT
 - CONTAINS()
 - FREETEXT()
 - LIKE
 - DATEADD(DAY, #, GETGMTDATE())
- ▶ ORDER BY ASC | DESC

SharePoint SQL Syntax

```
SELECT "DAV:Href", "Title",  
"Description"  
FROM SCOPE()  
WHERE FREETEXT('gallery hinges')  
AND "SITE" = "http://support"  
AND "SCOPE" = "Products"  
AND NOT CONTAINS('brass')
```

Process Results

- ▶ 'ResultsTableCollection': IDataReaders
- ▶ One table for each requested result type
 - RelevantResults
 - SpecialTermResults
 - RefinementResults
 - VisualBestBetsResults
 - HighConfidenceResults
 - DefinitionResults
- ▶ Tip: use LINQ to work with results

Demo

**USE SHAREPOINT SEARCH TO
CREATE CUSTOM SOLUTIONS**

USE POWERSHELL FOR MANAGING SHAREPOINT SEARCH

Manageability - PowerShell

- ▶ 118 SharePoint Search cmdlets!
- ▶ Verbs, nouns, objects , pipes, and scripts
 - Get-SPEnterpriseSearchServiceApplication | Set-SPEnterpriseSearchServiceApplication
- ▶ Unlock advanced configurations
 - SSA VerboseQueryMonitoring
 - Import-SPEnterpriseSearchTopology
 - Export-SPEnterpriseSearchTopology

Export Search Topology

```
# Retrieve Search Service Application and display contents
```

```
$ssa = Get-SPEnterpriseSearchServiceApplication
```

```
# Export Search Topology to an XML file
```

```
Export-SPEnterpriseSearchTopology -Filename "c:\SPEvo\SearchTopology.xml" -SearchApplication $ssa
```

```
- <TopologySettings xmlns="http://schemas.microsoft.com/office/2009/SearchTopology">  
  <ApplicationId>0bab55ac-6867-470e-be8a-66f253462382</ApplicationId>  
  <ObjectId>487b8890-98bd-49fe-97cb-23a89e717840</ObjectId>  
- <AdminTopology>  
  <AdminComponentServer>SP2010RC</AdminComponentServer>  
- <AdminDatabase>  
  <Server>DCSQL</Server>  
  <Name>Search_Service_Application_DB_d09a3479f4a74a429efa8249609dee5e</Name>  
  <DatabaseId>0c23ad00-4033-44c5-9eb9-be97415266fa</DatabaseId>  
  </AdminDatabase>  
</AdminTopology>  
- <QueryTopology>  
- <PropertyStores>  
  - <PropertyStore>  
    <Id>DCSQL-Search_Service_Application_PropertyStoreDB_913221fcfdcc4a0b815f1b503f282abf</Id>  
  - <Database>  
    <Server>DCSQL</Server>  
    <Name>Search_Service_Application_PropertyStoreDB_913221fcfdcc4a0b815f1b503f282abf</Name>  
    <DatabaseId>62c803f0-5530-4c10-bffa-7387a1e423b8</DatabaseId>  
  </Database>
```

Example – Crawled Properties

```
Name           : EntityName
CategoryName    : Business Data
Propset         : 2edeba9a-0fa8-4020-8a8b-30c3cdf34ccd
IsMappedToContents : False
VariantType     : 31

Name           : EntityNamespace
CategoryName    : Business Data
Propset         : 2edeba9a-0fa8-4020-8a8b-30c3cdf34ccd
IsMappedToContents : False
VariantType     : 31

Name           : Read ListElement.CompanyName
CategoryName    : Business Data
Propset         : 2edeba9a-0fa8-4020-8a8b-30c3cdf34ccd
IsMappedToContents : True
VariantType     : 31
```

```
# Retrieve Search Service Application and display contents
$ssa = Get-SPEnterpriseSearchServiceApplication

# Retrieve crawled property categories
$searchcat = Get-SPEnterpriseSearchMetadataCategory -SearchApplication $ssa

# Retrieve crawled properties -- Too many results!!!
Get-SPEnterpriseSearchMetadataCrawledProperty -SearchApplication $ssa

# Retrieve crawled properties in the Business Data Category
Get-SPEnterpriseSearchMetadataCrawledProperty -SearchApplication $ssa
| where-object {$_.CategoryName -eq "Business Data"}
```

Summary

- ▶ Highly customisable search UI
- ▶ Public web parts and SharedQueryManager
- ▶ New Connector framework
- ▶ FullTextSqlQuery for writing your own complex search queries
- ▶ LINQ for managing result sets
- ▶ PowerShell for configuring and managing search

Thank you for attending!