

SharePoint Search

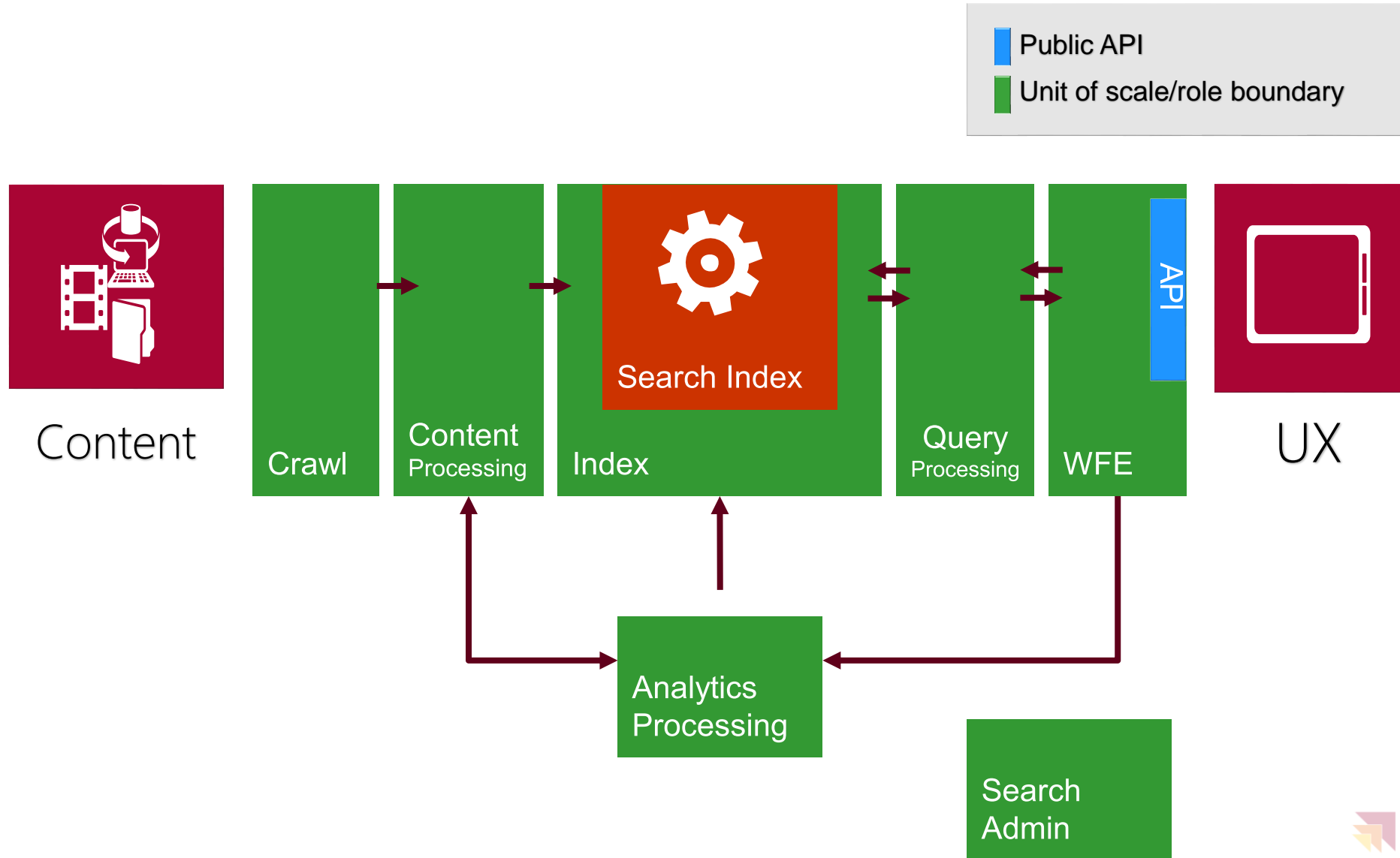


Agenda

- SharePoint 2016 Search Architecture
- Managed Properties
- Query Execution using KQL
- Result Sources and Query Rules
- Result Types and Custom Display Templates
- Executing Searches Programmatically



SharePoint 2016 Search Architecture



Building Blocks for Extending Search

- Managed Properties
- Result Sources
- Query Rules
- Result Types
- Search Navigation



Configuring the SharePoint Search Service

- Central Administration (SSA)
 - Content Sources
 - Result Sources
 - Query Rules
 - New Managed Properties
- Site Collection and Site
 - Result Sources
 - Result Types
 - Query Rules
 - Reassign Managed Properties





DEMO

Search Administration

Agenda

- ✓ SharePoint 2016 Search Architecture
- Managed Properties
 - Query Execution using KQL
 - Result Sources and Query Rules
 - Result Types and Custom Display Templates
 - Executing Searches Programmatically



Managed Properties

- Mapped to Crawled Properties
 - Tenancy level
 - Site Collection level
- Site Columns Become Managed Properties
 - Publishing and Multiple Lines prefixed with `ows_r_<four-letter-code>`
 - Managed Metadata prefixed with `ows_taxId`
 - All others prefixed with `ows_q_<four-letter-code>`



Managed Properties

Property	Description
Queryable	Managed Property can be used in property-based searches
Refinable	Managed Property can be used as a refiner
Retrievable	Managed Property can be returned in the results
Searchable	Includes the value of the Managed Property in the Search Index
Sortable	Managed Property can be used for sorting results
Type	The data type of the Managed Property
Safe	Can be returned to anonymous users
Alias	Friendly names
Multi-valued	Managed Property can have multiple values



Product-related Managed Properties



Search Service Application: Managed Properties

Central Administration

Farm Search Administration

Search Administration

Diagnostics
Crawl Log
Crawl Health Reports
Query Health Reports
Usage Reports

Crawling
Content Sources
Crawl Rules
Server Name Mappings
File Types
Index Reset
Pause/Resume
Crawler Impact Rules

Queries and Results
Authoritative Pages
Result Sources
Query Rules
Query Client Types
Search Schema
Query Suggestions

[Managed Properties](#) | [Crawled Properties](#) | [Categories](#)

New Managed Property

Property Name	Type	Multi	Query	Search	Retrieve	Refine	Sort	Safe	Mapped Crawled Properties
ProductCatalogGroupNumberOWSTEXT	Text	-	Query	-	Retrieve	-	Sort	Safe	ows_ProductCatalogGroupNumber
ProductCode	Text	-	Query	Search	Retrieve	-	-	-	ows_ProductCode
ProductCodeOWSTEXT	Text								
ProductColor	Text	Multi	Query	Search	Retrieve	Refine	-	-	ows_ProductColor
ProductColorOWSCHCM	Text								
ProductDescription	Text	-	-	Search	Retrieve	-	-	-	ows_ProductDescription
ProductDescriptionOWSMTXT	Text								
ProductImageUrl	Text	-	-	-	Retrieve	-	-	-	ows_ProductImageUrl
ProductImageUrlOWSURLH	Text								
ProductListPrice	Decimal	-	Query	-	Retrieve	Refine	Sort	-	ows_ProductListPrice
ProductListPriceOWSCURR	Text								
owstaxIdProductCatalogItemCategory	Text	Multi	Query	Search	Retrieve	Refine	-	Safe	ows_taxId_ProductCatalogItemCategory





DEMO

Managed Properties

Agenda

- ✓ SharePoint 2016 Search Architecture
- ✓ Managed Properties
- Query Execution using KQL
 - Result Sources and Query Rules
 - Result Types and Custom Display Templates
 - Executing Searches Programmatically



Keyword Query Language (KQL)

- Free text
 - SharePoint
- Wildcard
 - Share*
- Managed Property
 - Author:McD*, ContentType:Image
- NEAR, ONEAR
 - SharePoint NEAR Social





DEMO

Search Queries

Agenda

- ✓ SharePoint 2016 Search Architecture
- ✓ Managed Properties
- ✓ Query Execution using KQL
- Result Sources and Query Rules
 - Result Types and Custom Display Templates
 - Executing Searches Programmatically



Result Sources

- Select a Source
 - Local SharePoint Index
 - Remote SharePoint Index
 - OpenSearch
 - Exchange
- Apply a Query Transformation
 - Defines a subset of the source

The screenshot displays the 'Build Your Query' interface, which is divided into two main sections: 'Build Your Query' on the left and 'SEARCH RESULT PREVIEW' on the right.

Build Your Query Section:

- BASICS** (selected), SORTING, TEST
- Keyword filter:** A dropdown menu labeled 'Query after all transformations' with an 'Add keyword filter' button below it.
- Property filter:** A dropdown menu labeled 'Author' with a 'Contains' dropdown and a 'Name of the user who runs' dropdown, followed by an 'Add property filter' button.
- Query text:** A text area containing the query: `{searchTerms} ContentClass:STS_ListItem_Tasks AssignedToOWSUSER:(User.Name) PercentCompleteOWSNMBR<>'100'`. This text is highlighted in yellow.
- Test query:** A button at the bottom right of the 'Build Your Query' section, circled in red.

SEARCH RESULT PREVIEW Section:

- RelevantResults (2):** A list of two search results, each with a link and a URL.
- Result 1:** [Create a search-based sample app](#) with URL `connect2014.sharepoint.com/Lists/DispForm.aspx?ID=1`.
- Result 2:** [Create a Search Center sample](#) with URL `connect2014.sharepoint.com/Lists/DispForm.aspx?ID=2`.

A red arrow points from the 'Test query' button to the 'SEARCH RESULT PREVIEW' section.



Query Rules

- Applied to a given Result Source
- Processed under specified conditions
 - Keyword match
 - Topic category match
- Affects the query results
 - Alter the user's query
 - Generate a Result Block



Query Rules

- Intercept and change a users query
- Promote Special Content
 - Best Bets
 - Detect the User
 - Act on user “intent”
 - Perform another query
 - Create banner ads
- Change the rank of results
- So much more...





DEMO

Query Rules

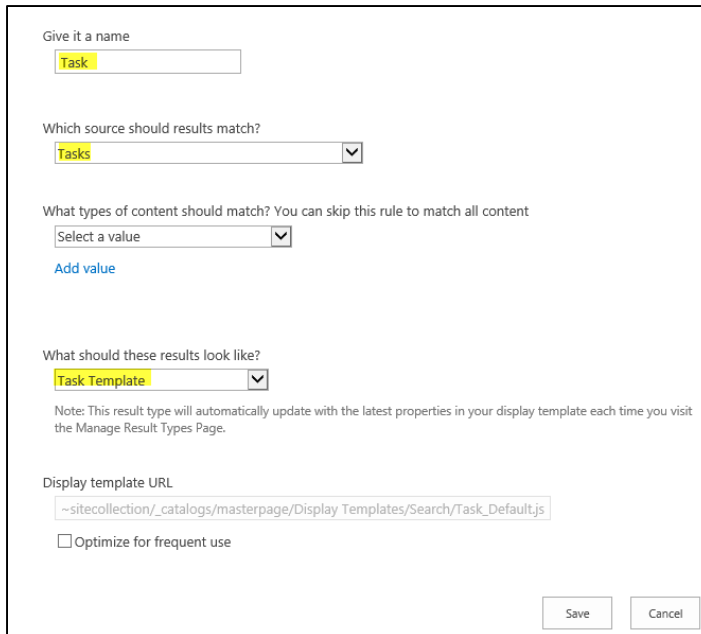
Agenda

- ✓ SharePoint 2016 Search Architecture
- ✓ Managed Properties
- ✓ Query Execution using KQL
- ✓ Result Sources and Query Rules
- Result Types and Custom Display Templates
 - Executing Searches Programmatically



Result Types

- Bound to a given Result Source
- Defined by a rule
- Associated with a template for display
 - Determines how Result Type appears
 - Created as an HTML file referencing Managed Properties



Give it a name

Task

Which source should results match?

Tasks

What types of content should match? You can skip this rule to match all content

Select a value

[Add value](#)

What should these results look like?

Task Template

Note: This result type will automatically update with the latest properties in your display template each time you visit the Manage Result Types Page.

Display template URL

~sitecollection/_catalogs/masterpage/Display Templates/Search/Task_Default.js

☐ Optimize for frequent use

Save Cancel



Display Templates

- HTML Template for
 - Search Result
 - Refiner
 - Content By Search
 - Controls
 - Containers
 - Etc...
- Upload HTML and SharePoint Converts it to *.JS
- Use any editor
 - NotePad++, Dreamweaver...
 - even SharePoint Designer!



Display Templates

```
<div id="_#=$htmlEncode(itemId) =#_" name="Item" data-displaytemplate="TaskItem"
  class="ms-srch-item" onmouseover="_#=$ctx.currentItem_ShowHoverPanelCallback =#_"
  onmouseout="_#=$ctx.currentItem_HideHoverPanelCallback =#_">
  <h3>
    
    <span>_#=$ctx.CurrentItem.Title=#_</span><br />
    <span>Assigned To: _#=$ctx.CurrentItem.AssignedTo=#_</span><br />
    <span style="_#=$getDueDateStyle()=#_">Due Date: _#=$getFormattedDate()=#_</span>
  </h3>
  <div id="_#=$htmlEncode(hoverId) =#_" class="ms-srch-hover-outerContainer"></div>
</div>
```

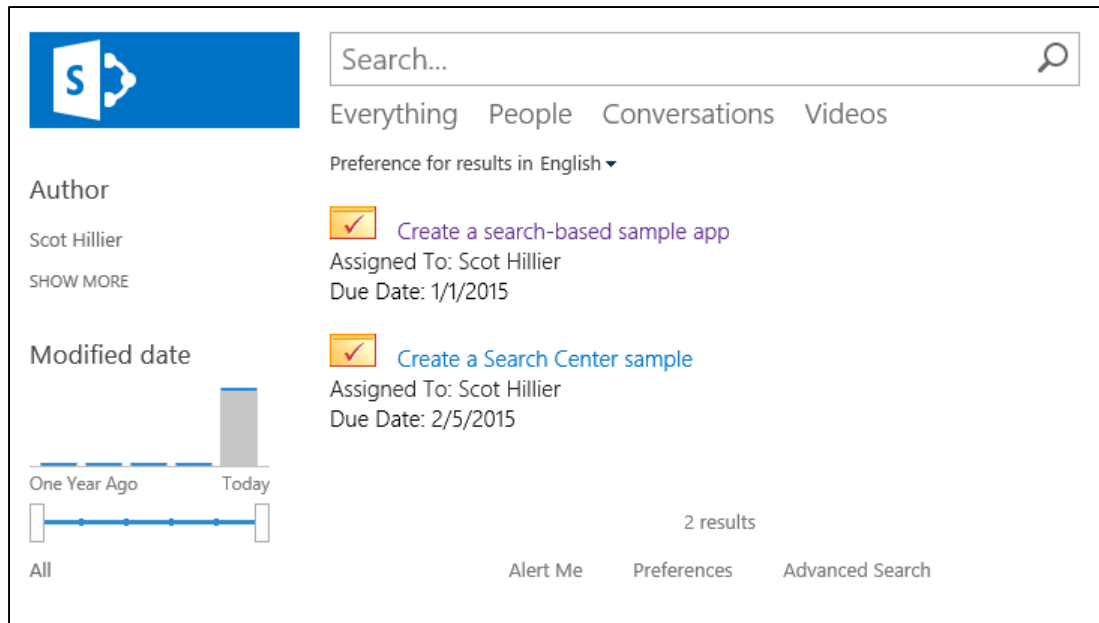
```
getFormattedDate = function() {
  var d = new Date(ctx.CurrentItem.DueDateOWSDATE);
  return (d.getMonth() + 1) + "/" + d.getDate() + "/" + d.getFullYear();
};

getDueDateStyle = function() {
  var d1 = new Date(ctx.CurrentItem.DueDateOWSDATE);
  var d2 = new Date();
  if(d2>d1)
    return 'color:red';
  else
    return 'color:black';
};
```



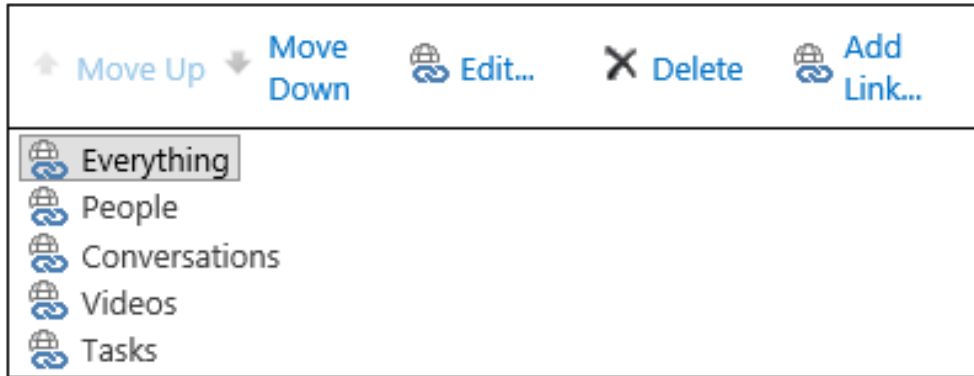
Custom Search Results

- Use building blocks to create custom solutions in Search Center



Search Navigation

- Provides navigation across pages in Search Center



Export/Import Search Settings

- Configuration export
 - SearchConfiguration.xml
 - Handles rules, sources, managed properties, etc.
 - Does not handle master pages, templates, and web parts
- Configuration import
 - Import into site, site collection, tenancy
 - Programmatically import with app





DEMO

Display Templates and Result Types

Agenda

- ✓ SharePoint 2016 Search Architecture
- ✓ Managed Properties
- ✓ Query Execution using KQL
- ✓ Result Sources and Query Rules
- ✓ Result Types and Custom Display Templates
- Executing Searches Programmatically



REST Endpoint

Keywords

`https://tenant/site/_api/search/query?querytext='{KQL Query}'`

Selecting Properties

`https://tenant/site/_api/search/query?querytext='test'&selectproperties='Title,Rank'`

Sorting

`https://tenant/site/_api/search/query?querytext='test'&sortlist='LastModifiedTime:descending'`



JavaScript and REST

```
$.ajax(  
    {  
        url: "http://site/_api/search/" +  
            "query?querytext='{KQL Query}'",  
        method: "GET",  
        headers: {  
            "accept": "application/json;odata=verbose",  
        },  
        success: onSuccess,  
        error: onError  
    }  
);
```



JavaScript and CSOM

```
var context = SP.ClientContext.get_current();

var keywordQuery =
new Microsoft.SharePoint.Client.Search.Query.KeywordQuery(context);

keywordQuery.set_queryText("sharepoint");

var searchExecutor =
new Microsoft.SharePoint.Client.Search.Query.SearchExecutor(context);

results = searchExecutor.executeQuery(keywordQuery);

context.executeQueryAsync(onGetEventsSuccess, onGetEventsFail);
```



C# and REST

```
var spContext = SharePointContextProvider.Current.GetSharePointContext(HttpContext);
string accessToken = spContext.UserAccessTokenForSPAppWeb;

string url = "http://site/_api/search/query?querytext='sharepoint'";

HttpClient client = new HttpClient();
HttpRequestMessage request = new HttpRequestMessage(HttpMethod.Get, url);
request.Headers.Accept.Add(new MediaTypeWithQualityHeaderValue("application/xml"));
request.Headers.Authorization = new AuthenticationHeaderValue("Bearer", accessToken);

HttpResponseMessage response = await client.SendAsync(request);
string responseString = await response.Content.ReadAsStringAsync();
```



C# and CSOM

```
var spContext = SharePointContextProvider.Current.GetSharePointContext(Context);

using (var cctx = spContext.CreateUserClientContextForSPHost())
{
    KeywordQuery query = new KeywordQuery(cctx);
    query.QueryText = "{KQL}";
    SearchExecutor executor = new SearchExecutor(cctx);
    ClientResult<ResultTableCollection> results = executor.ExecuteQuery(query);
    cctx.ExecuteQuery();
}
```



App Permissions

```
<AppPermissionRequest  
  Scope=http://sharepoint/search  
  Right="QueryAsUserIgnoreAppPrincipal" />
```

Do you trust Employee Directory?

Let it access basic information about this site.

Let it access basic information about the users of this site.

Allow this app to execute search queries on your behalf, ignoring the app's permissions on result items.



Employee Directory

Trust It

Cancel



Summary

- ✓ SharePoint 2016 Search Architecture
- ✓ Managed Properties
- ✓ Query Execution using KQL
- ✓ Result Sources and Query Rules
- ✓ Result Types and Custom Display Templates
- ✓ Executing Searches Programmatically

