

Building apps for Microsoft SharePoint and OneDrive

Integrate and extend with your application experience

Agenda

- Microsoft SharePoint and OneDrive Overview and Opportunity
- Extensibility scenarios
 - Files
 - Lists
 - SharePoint Framework (SPFX)
 - Deployment and Configuration
 - Open Source



OneDrive
Team sites



Intranet Sites
Portals



Portals\Lists integration
Power Apps & Power
Automate



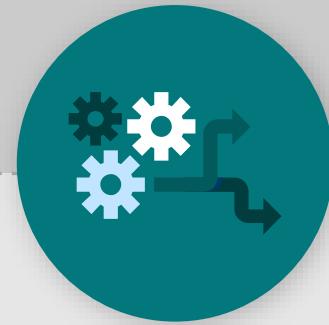
Share and
work together



Inform and
engage people



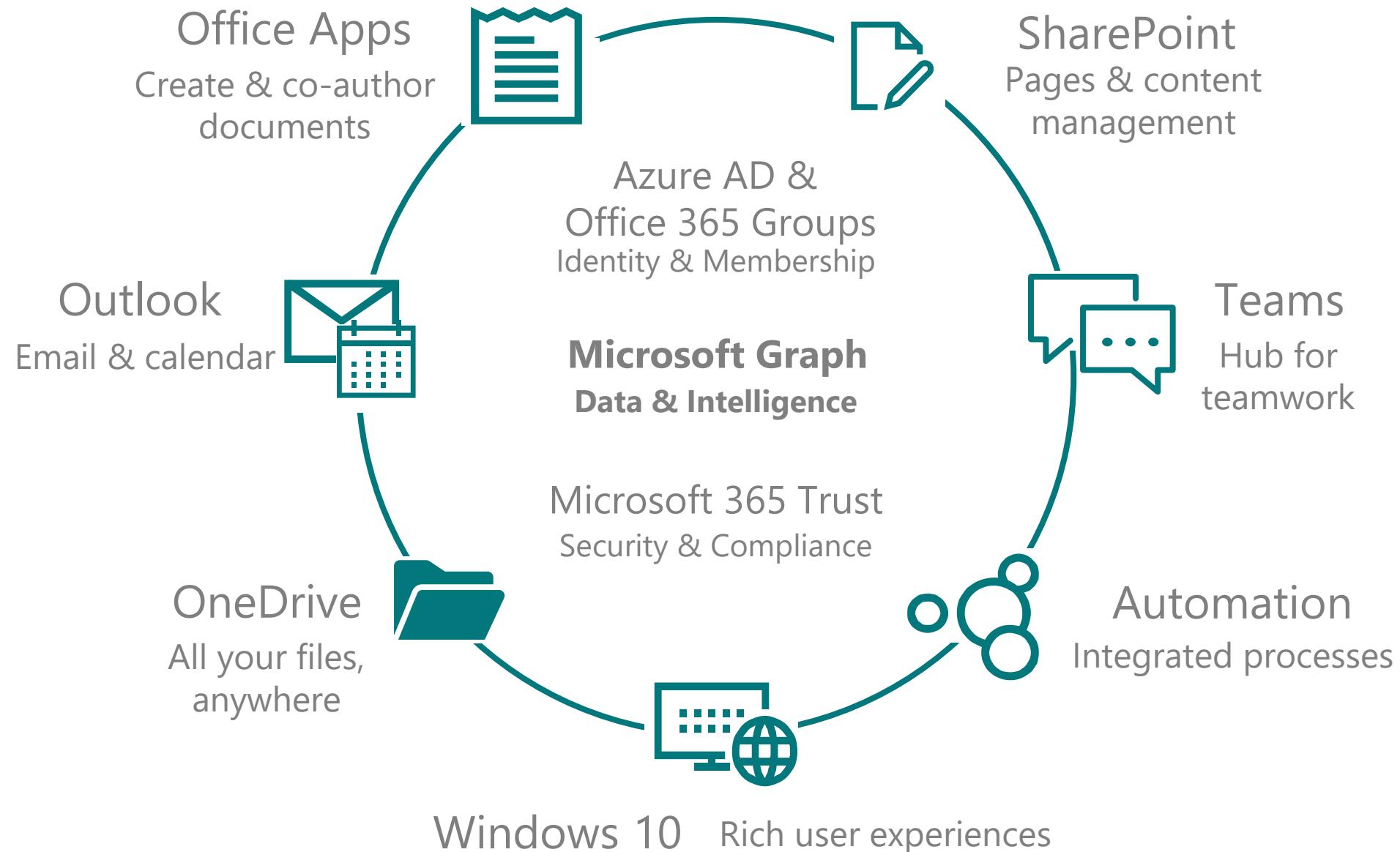
Harness collective
knowledge



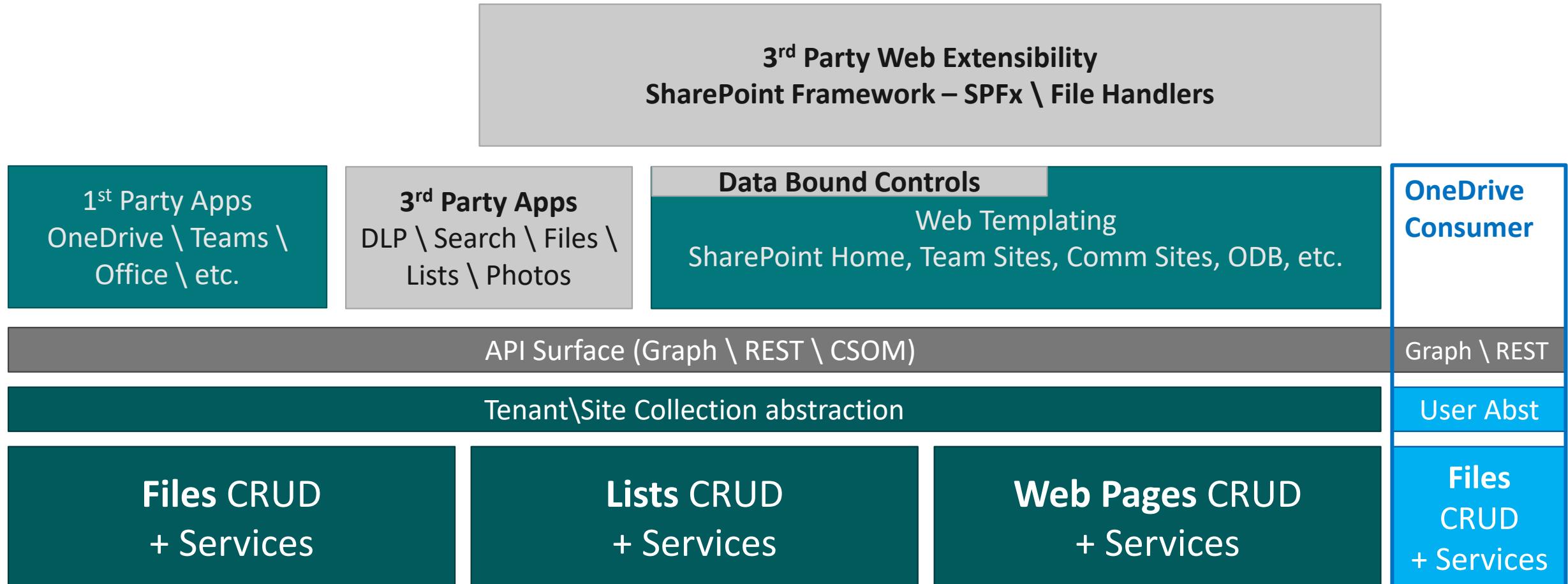
Transform
business processes

Extend & develop

Microsoft 365 Extensibility Foundation



SharePoint & OneDrive functional design



Files extensibility scenarios

An overview of the extensibility options when working with files
in SharePoint and OneDrive

Files

Good afternoon

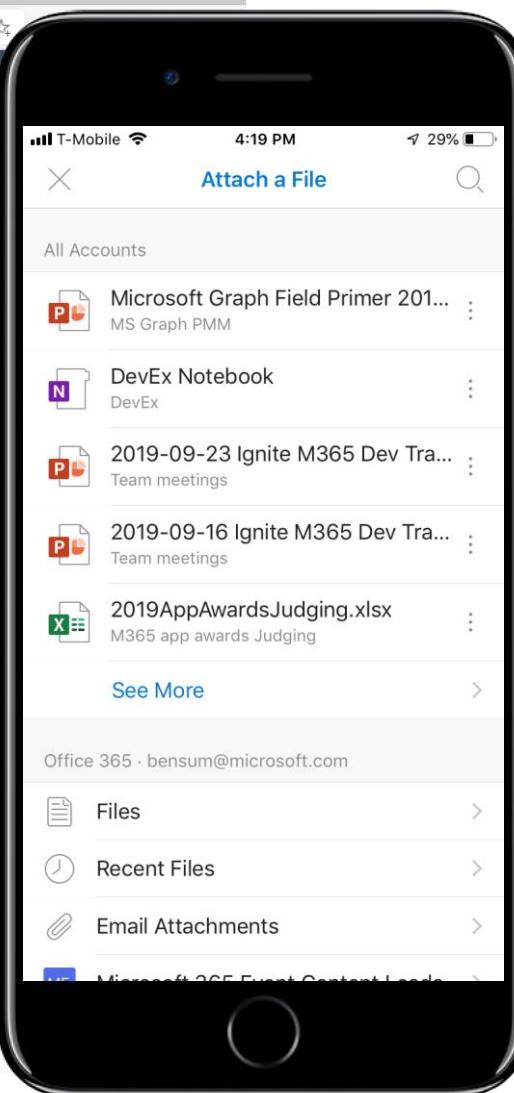
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Show more ▾



Contoso Pre-shop for members with status

Grady Archie

Grady Archie Designer R&D

Update your profile

Files >

- Zero-Hour Auto Purge - Malware... Emailed 11:36 AM
- Proposed Litware Agreement Modified 8/25/2020
- Court Case WinLoss Modified 8/25/2020

Show more files

Email >

Re: Contoso Pre-shop for members... 11:39 AM

You Sure thing, lets take this to a Teams convo, I have ...

File Preview

No additional infrastructure for hosting

Maintain a focus on your App while we do the rest

Government and Industry compliant

Turbocharged SharePoint file storage

Fast, phenomenal, and fluid

10X

faster downloads

3X

performance

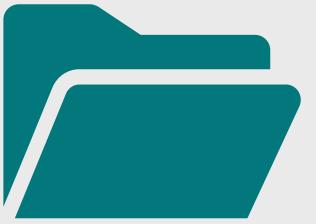
30x

faster indexing

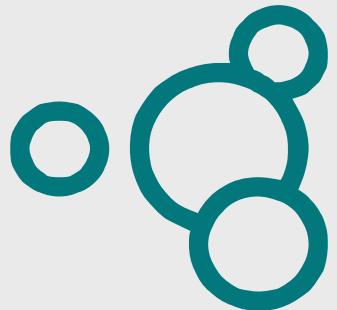
320+

file types

← AI-POWERED INSIGHTS — INTELLIGENT SECURITY — INNOVATIVE EXPERIENCES →



Viewing, selecting
and uploading files



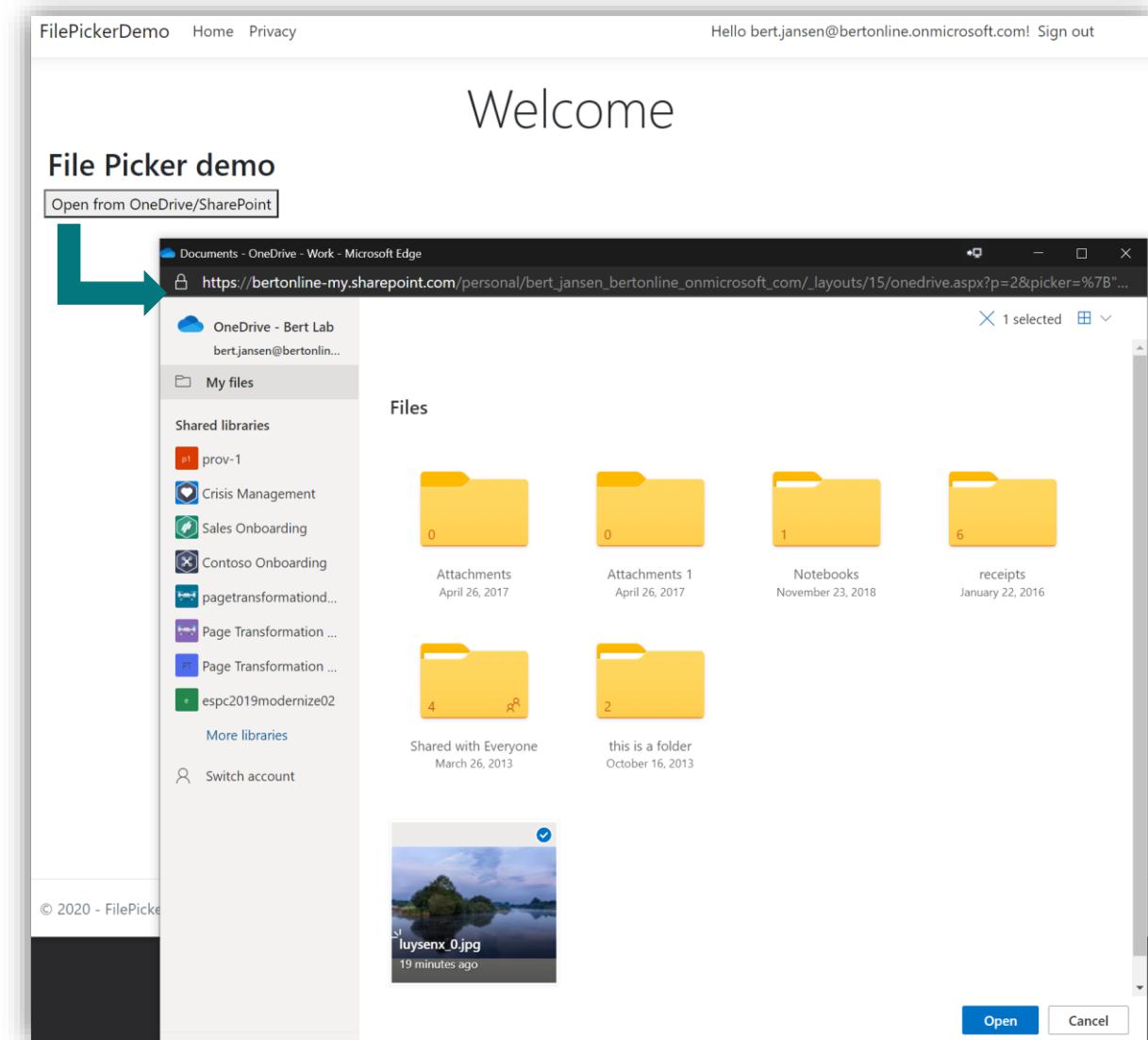
Deep integration
via API's



Owning my file
types

Selecting files

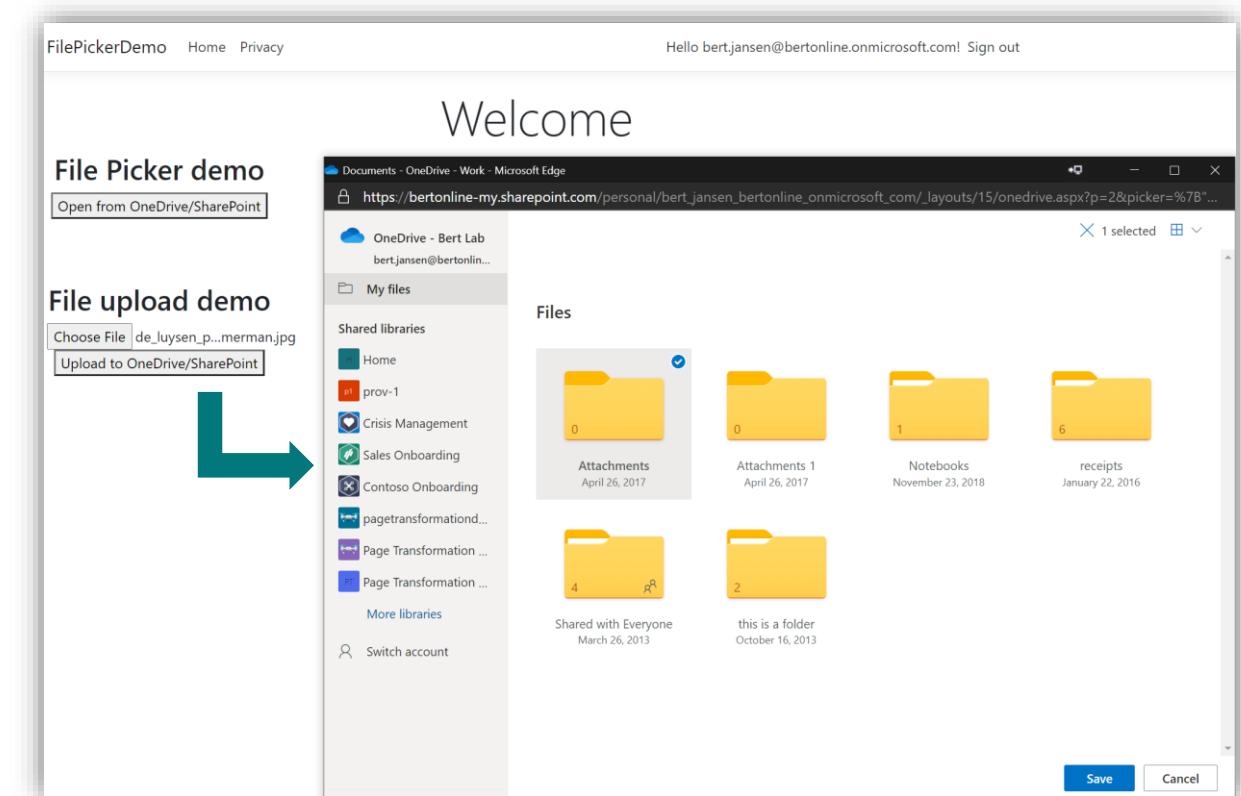
- Control allowing file browsing and picking
 - File Open mode: allows for file downloads via direct download link, file id's (for API access) or read-only sharing link
- Implementation:
 - JavaScript library:
<https://js.live.net/v7.2/OneDrive.js>
- Resources:
 - [Documentation](#)
 - ASP.Net Core sample
 - [SPFx sample](#)



A new picker experience is in progress

Uploading files

- Control allowing file browsing and uploading
 - File Save mode: file upload via direct upload or upload location id's (for API access)
- Implementation:
 - JavaScript library:
<https://js.live.net/v7.2/OneDrive.js>
- Resources:
 - [Documentation](#)
 - ASP.Net Core sample

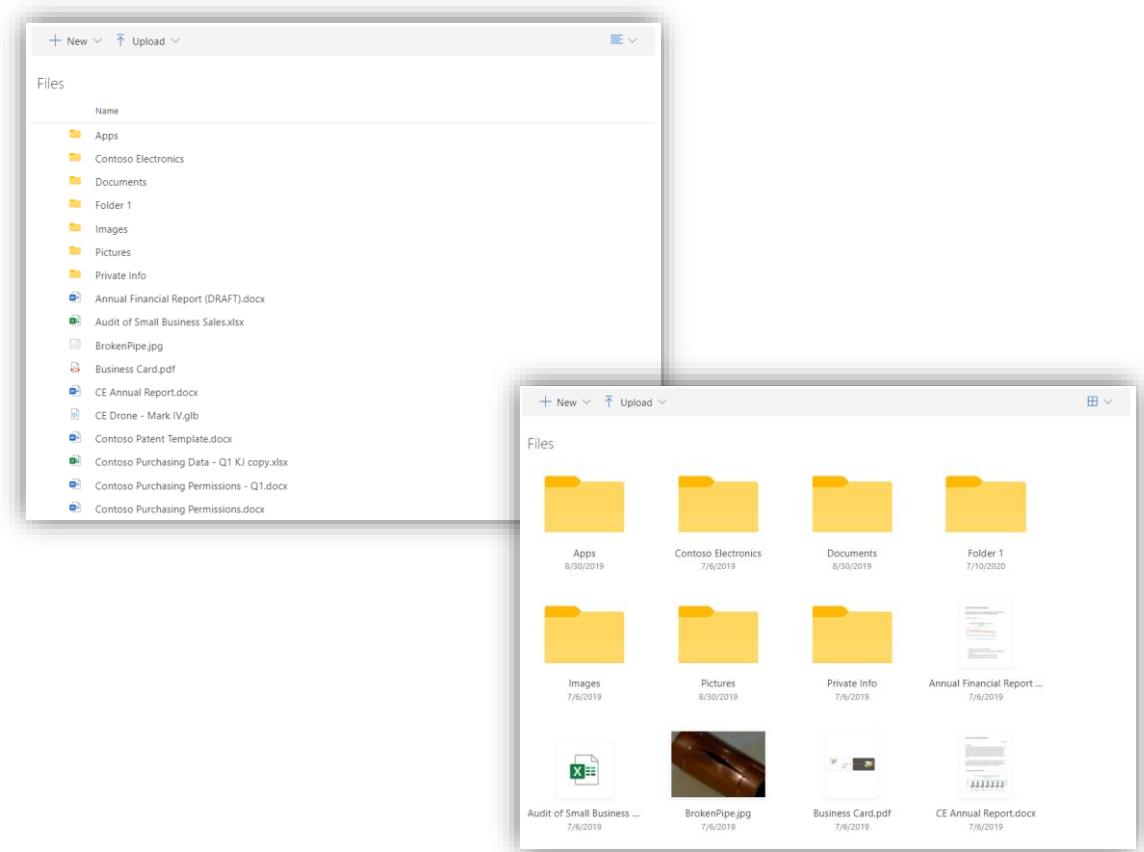


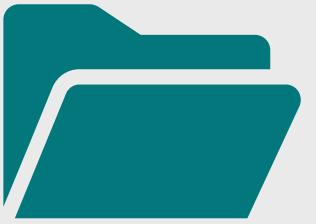
A new picker experience is in progress

Browsing files (soon)

- Embed a browsing control in your application that works similar as the browsing files in Microsoft's products like Office, SharePoint and Teams

Coming soon!





Viewing, selecting
and uploading files

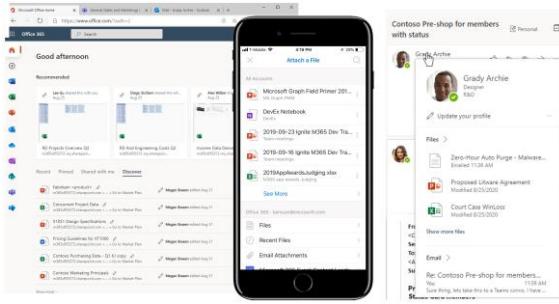


Deep integration
via API's



Owning my file
types

Single Source for Personal and Corporate Data



Files (drive/drive item) represents an item within a drive, like a document, photo, video, or folder

/v1.0/me/drive
/v1.0/sites/{id}/drives
/V1.0/sites/{id}/drive/items/{id}
/v1.0/groups/{id}/drive



Microsoft Graph

The screenshot shows the Microsoft Teams interface with the 'Documents' tab selected. It displays a list of files and folders, including 'Building an ecosystem for responsible_dro...', 'Contoso_company Goals Q1 -...', 'Contoso_employeestore...', 'Contoso-CompanyVision...', 'ContosoGivingProgram...', 'CustomerService-powerful marketing weap...', 'Diversity and inclusion [editable]...', 'Financial Reporting...', 'FlagshipProjections_Q3StatReport...', and 'Keynote Speech-...'. There are also buttons for '+ New', 'Upload', and 'Edit in ...'.

Use in a File Picker

The screenshot shows a Microsoft Edge browser window displaying a file viewer interface. It lists documents such as 'Building_an_ecosystem_for_responsible_dro...', 'Contoso_company Goals Q1 -...', 'Contoso_employeestore...', 'Contoso-CompanyVision...', 'ContosoGivingProgram...', 'CustomerService-powerful marketing weap...', 'Diversity and inclusion [editable]...', 'Financial Reporting...', 'FlagshipProjections_Q3StatReport...', and 'Keynote Speech-...'. A specific document, 'Contoso Company Goals Q1 -...', is highlighted. The interface includes a 'See details' button, an 'Inside look' section with a 'Time to read: 1 min' estimate, and a 'At a glance' summary with bullet points about product quality and digital cameras.

Native File Viewing



Doc Gen & Save

The screenshot shows the Microsoft OneDrive desktop application window. It displays a message 'OneDrive is up to date' with a checkmark. The left sidebar shows 'Quick access' with items like Desktop, Downloads, Documents, Pictures, Camtasia, Music, My Maps, Videos, and OneDrive. The main pane shows a folder structure with 'This PC', '3D Objects', and 'Desktop'.

Native File Syncing

Basic Microsoft Graph elements

Sites – Contains lists, drives, and subsites

`/v1.0/sites/{site-id}`

Drive – Contains files and folders

DriveItem – A file or folder that is in a Drive

`/v1.0/sites/{siteId}/drive/items/{item-Id}`

File Previews

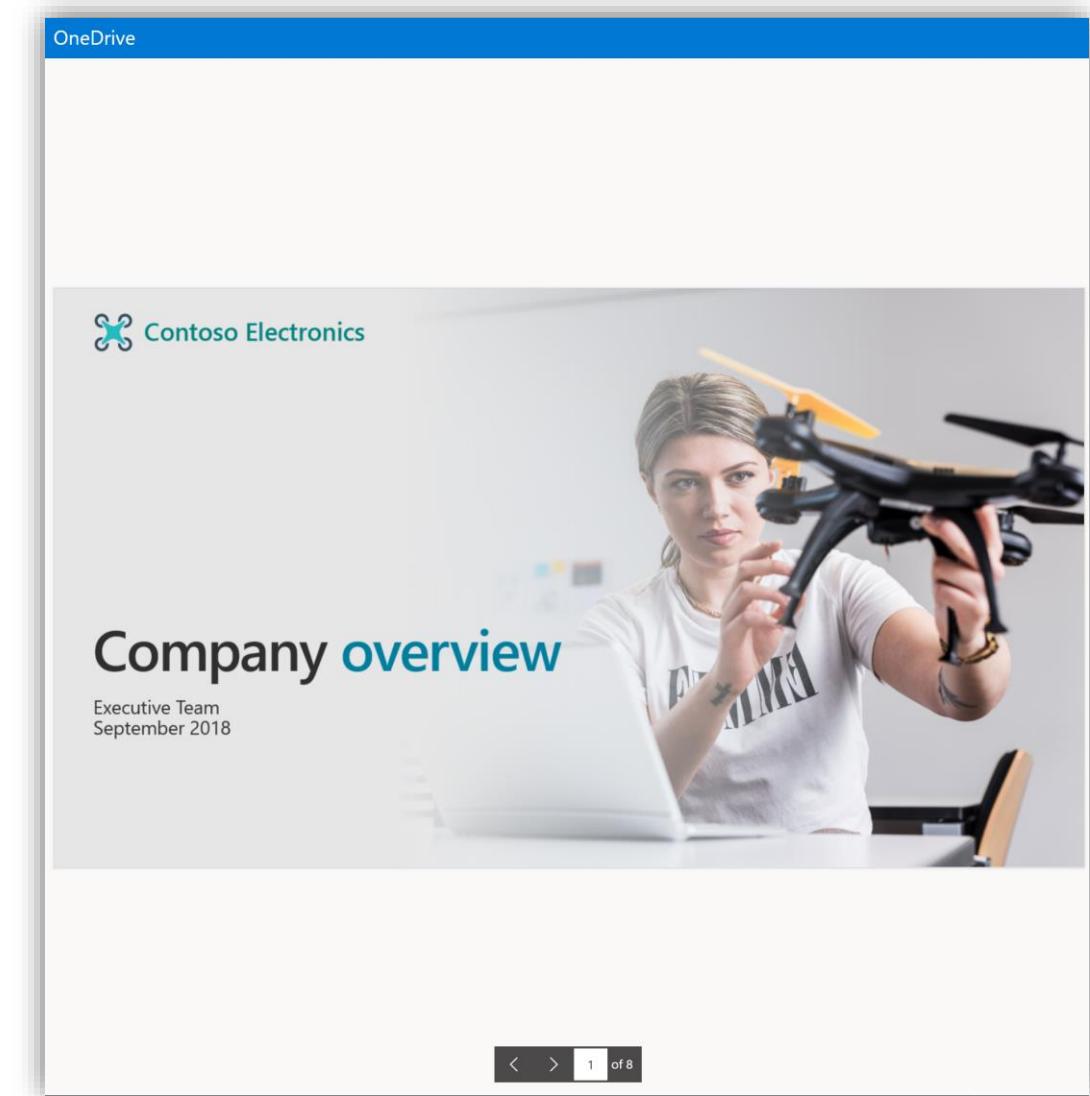
- Graph API to get previews of [320+ file types](#)

`v1.0/me/drive/items/{id}/preview`

`v1.0/sites/root/drives/{drive-id}/items/{id}/preview`

```
{  
  "@odata.context": "https://graph.microsoft.com/v1.0/\$metadata#microsoft.graph.itemPreviewInfo",  
  "getUrl": "https://bertonline.sharepoint.com/\_layouts/15/embed.aspx?uniqueId=af3dde1a-f7af-4bde-  
  "postParameters": null,  
  "postUrl": null  
}
```

- Resources:
 - [Graph documentation](#)
 - ASP.NET Core sample



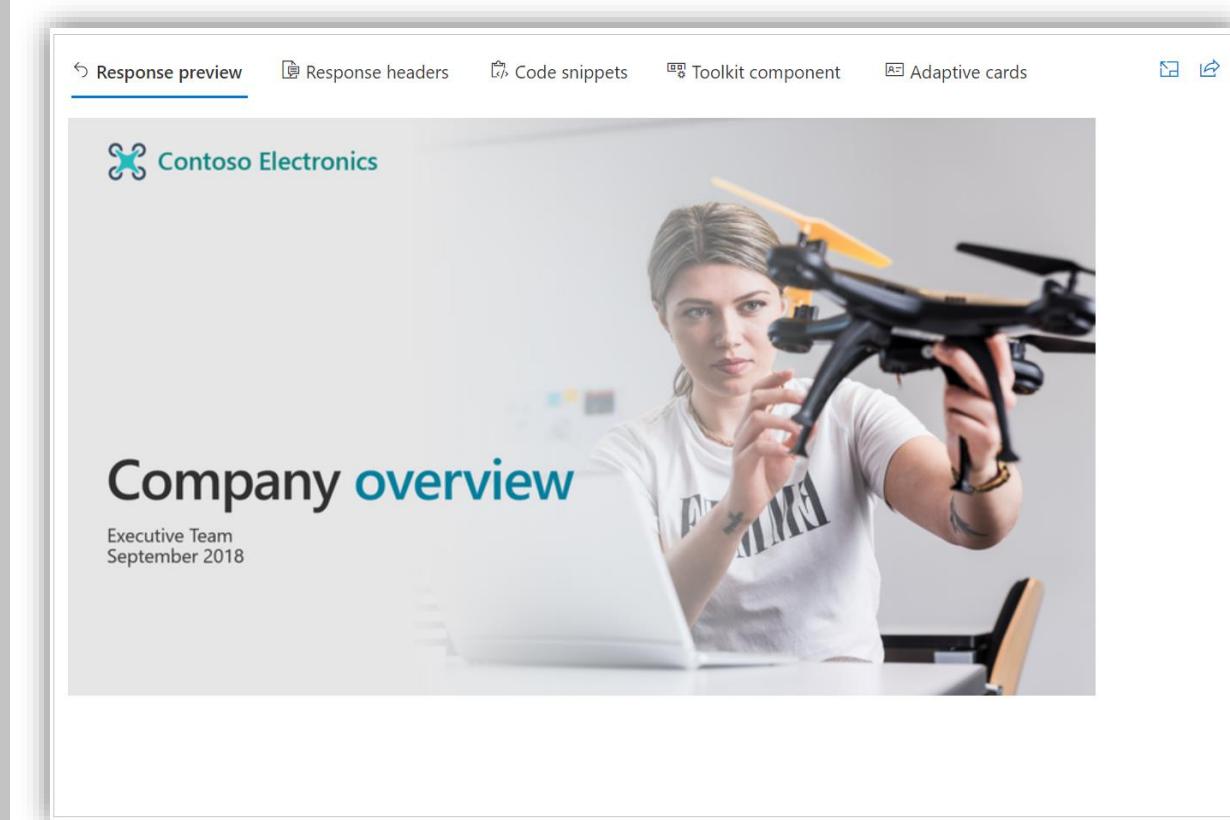
File Thumbnails

- Graph API to get thumbnails of [320+ file types](#)

`v1.0/me/drive/items/{id}/thumbnails/
0/large/content`

`v1.0/sites/root/drives/{drive-
id}/items/{id}/thumbnails/
0/large/content`

- Resources:
 - [Graph documentation](#)
 - ASP.NET Core sample

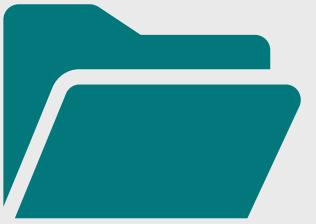


Subscriptions and Delta queries

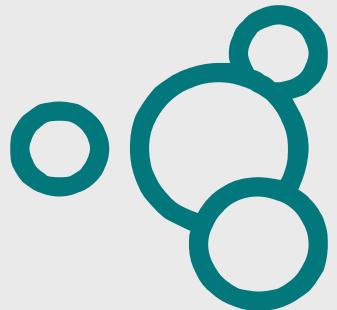
- Microsoft Graph based web hooks that you can use to be notified of events
- Delta queries to just get the changes since last time
- Resources:
 - [Subscriptions documentation](#)
 - [Delta query documentation](#)

Scan guidance

- Best practices for discovering files and detecting changes at scale
 - Continuously crawling all SharePoint content is not recommended, being notified of changes is a much better pattern
- Documentation:
 - aka.ms\scanguidance
 - aka.ms\deltadoc



Viewing, selecting
and uploading files



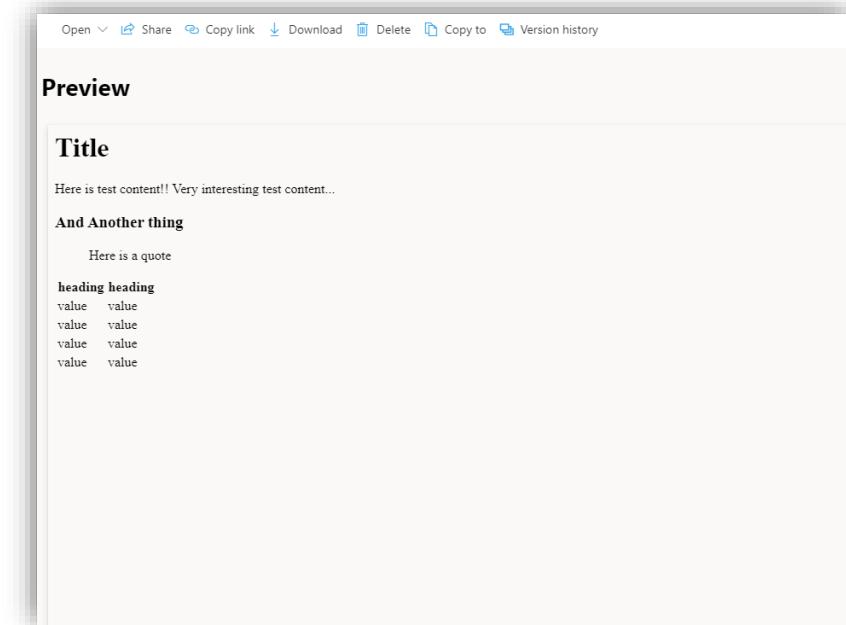
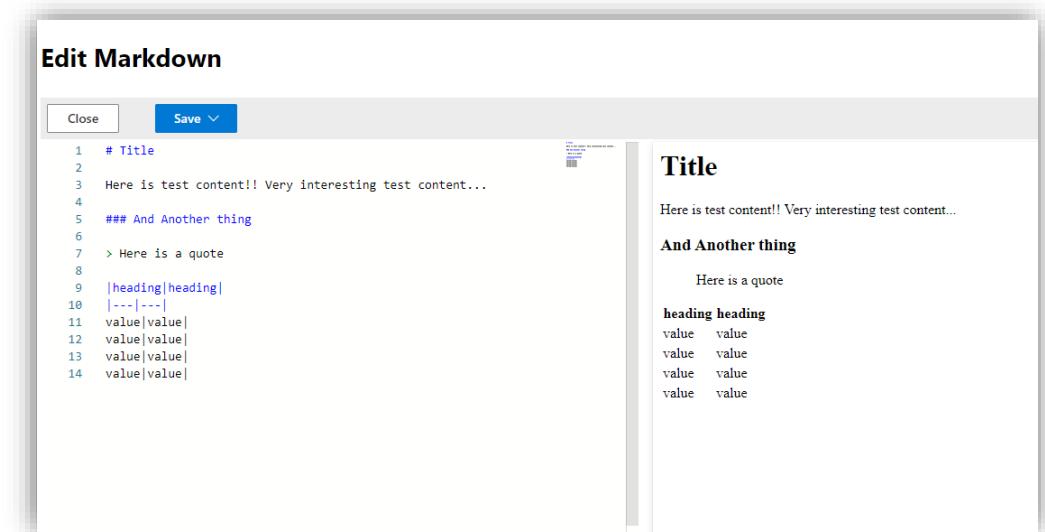
Deep integration
via API's



Owning my file
types

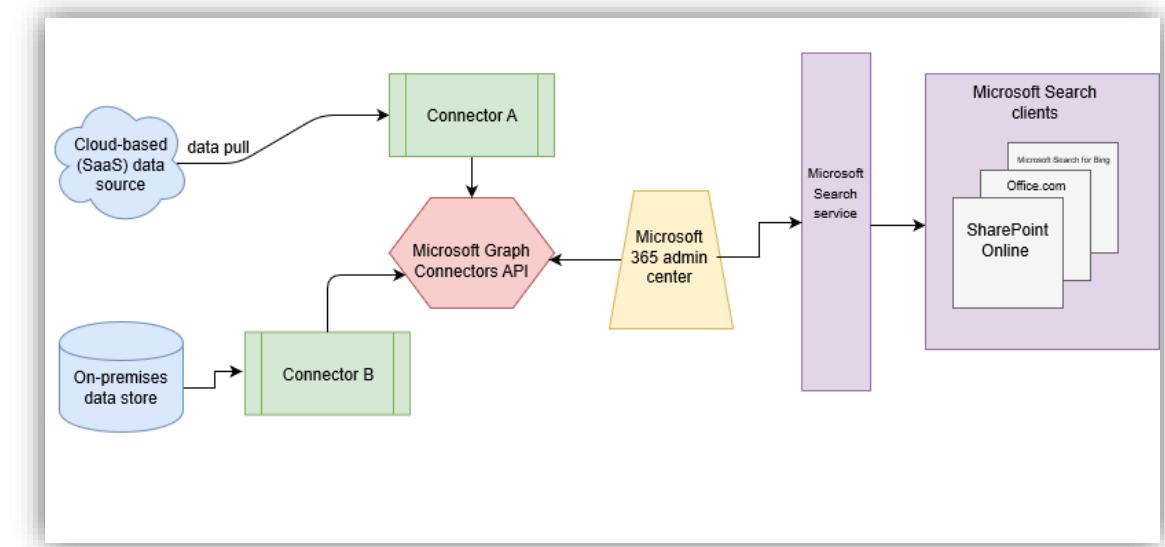
File handlers

- Enabling custom file experiences for your file types
 - File preview
 - Create new files in the browser
 - Rich view/edit capability
 - Custom actions that launch into your app
 - Customized file icons
- Resources
 - [Documentation](#)
 - Custom file handler sample



Graph Connector (preview)

- Enables ISV/third party specific data to appear in Microsoft Search results
 - Index your file data
 - 6 Microsoft built connectors – 100+ 3rd party connectors
- Resources
 - [Documentation](#)
 - [Microsoft Graph Connector gallery](#)
 - [Graph connector dotnet sample](#)



List extensibility scenarios

An overview of the extensibility options when working with lists in SharePoint

Empowering business processes via Lists

The screenshot shows the SharePoint Lists interface. On the left, a sidebar lists 'Event itinerary' and 'Issue tracker' as recent items. The main area displays two lists: 'Event itinerary' (using the 'Event itinerary' template) and 'Issue tracker'. The 'Event itinerary' list contains items like 'Breakfast meet & greet', 'Welcome & Introduction', and 'Icebreaker Sessions 1 - 4'. The 'Issue tracker' list contains numerous items with detailed descriptions and status columns (e.g., Priority, Status, Assigned to, Opened date, Days old).

Native Efficiency

Collect, manage, and distribute content and data using SharePoint lists and libraries

The screenshot shows the SharePoint Lists interface. It displays two lists: 'Asset manager' (using the 'Asset manager' template) and a custom list titled 'June Conference'. The 'Asset manager' list shows various assets like 'Microsoft Surface Pro X', 'Microsoft Surface Go 2', and 'Microsoft Surface Headphones'. The 'June Conference' list contains details about a conference session, including 'Session code' (KH221), 'Session type' (Keynote), 'Description' (Introduction session...), 'Start time' (6/5/2020 9:30 AM), 'End time' (6/5/2020 10:00 AM), 'Duration' (0.5 hours), 'Capacity' (100), and 'Location' (Grand Conference Room - Elm). A comment section is also visible.

Simple Configuration

Lists are the best way to organize the things your team cares about & must get done.

The screenshot shows the SharePoint Lists interface. It displays a news item titled 'Endangered birds' and a campaign sign-up form for 'Contoso Electronics'. The news item features a large image of a bird and a summary. The sign-up form includes fields for 'Event' (2018 Giving Campaign), 'Location' (Orlando, FL), 'Venue' (Talspin Events Center), 'Event type' (Nightlife), 'Services provided' (Nightlife), 'Start date' (9/28/2018), and 'Attachments' (Volunteer sign up sheet). A sidebar on the right shows user profiles for 'Contoso Electronics'.

Integrated Solutions

Compose analytics, user experiences, and business processes using an integrated set of services from Microsoft.

Track what matters most with Microsoft Lists



Simple

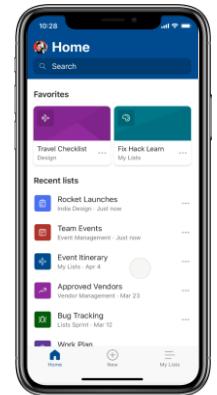
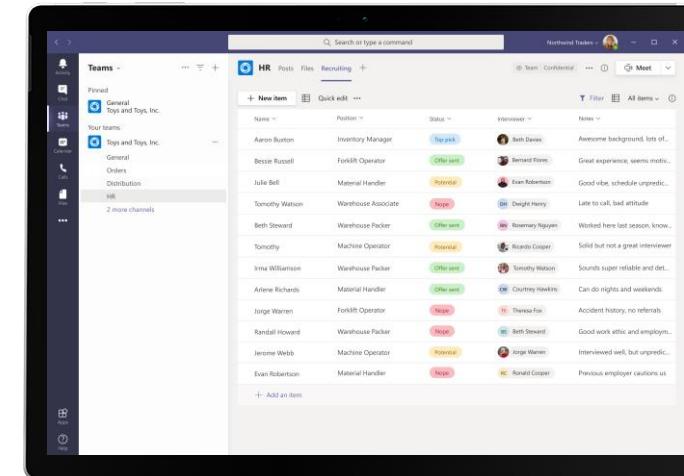
Easily create, share, and track lists with anyone, on any device

Smart

Keep everyone in sync with rules and quick edits

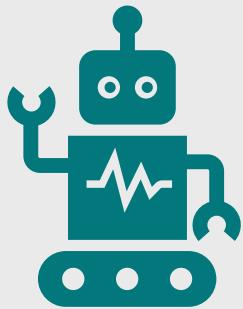
Flexible

Customize your lists for whatever your business needs





Simple
Configuration



Business Process
Automation



Deep integration
via API's

List Formatting : Columns

- Use JSON to control how a column is displayed
 - Out of the box designers available for power users
 - Include formatting when you provision lists
- For more advanced scenarios involving custom code checkout [SPFX Field Customizers](#)
- Resources
 - [Documentation](#)
 - [List formatting samples](#)

Title	Effort (Days)	Assigned To	Status
Herd Cats	7	Sadettin Dogan	In Progress
Book fancy dinner for the team	4	Hanne Peterson	Done
Lock down demo environment	10	Chinh Phan	Blocked
Book flights	1	Miroslava Polakovicova	In Review



Title	Effort (Days)	Assigned To	Status
Herd Cats	7	Sadettin Dogan	→ In Progress
Book fancy dinner for the team	4	Hanne Peterson	✓ Done
Lock down demo environment	10	Chinh Phan	✗ Blocked
Book flights	1	Miroslava Polakovicova	⚠ In Review

List Formatting : Views

- **Use JSON to control how a view is presented**
 - Out of the box designers available for power users
 - Include formatting when you provision lists
- **Resources**
 - [Documentation](#)
 - [List formatting samples](#)

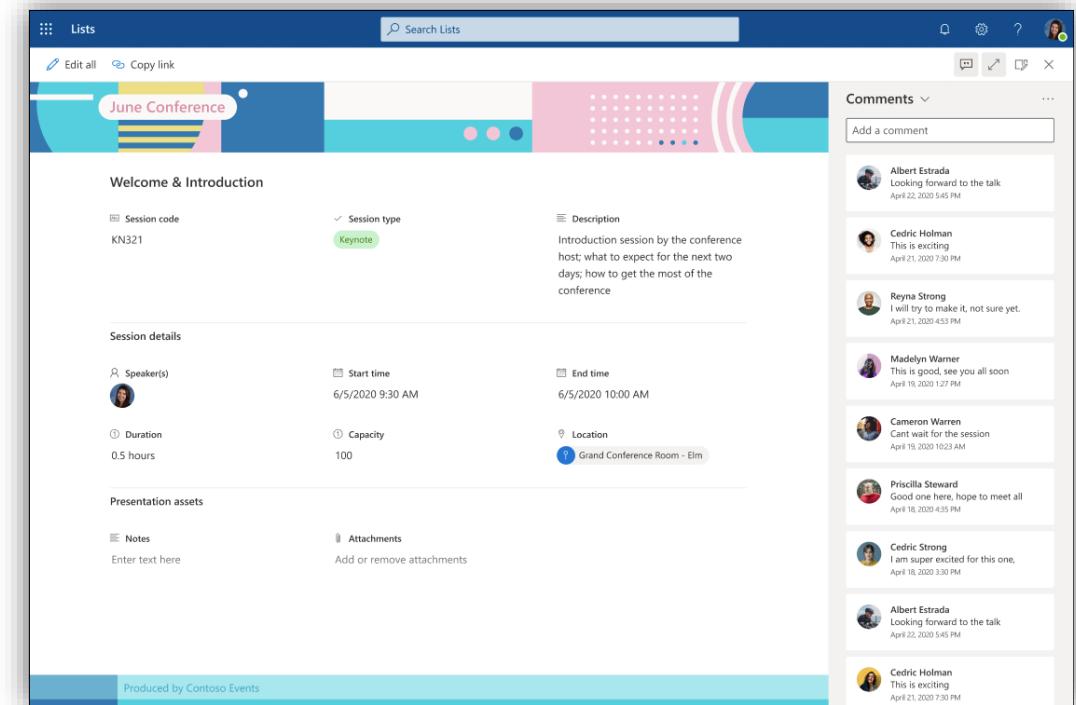
Title	Feedback	DueDate	+ Add column
Provide feedback on execution plan	Do more with less! Focus on customer requirements.	6/7/2018	
Provide feedback on executive retreat	A lot got done. The agenda was a bit hectic. The trapeze artists were a nice touch!	6/29/2018	
Provide feedback on happy hour menu	Truly world class!	6/5/2018	

Feedback List	
Provide feedback on execution plan	Do more with less! Focus on customer requirements. Give feedback
Provide feedback on executive retreat	A lot got done. The agenda was a bit hectic. The trapeze artists were a nice touch!
Provide feedback on morale event	More drinks, please! Give feedback

Feedback		
Provide feedback on execution plan	Do more with less! Focus on customer requirements	Provide feedback on executive event
		A lot got done. The agenda was a bit hectic. The trapeze artists were a nice touch!
Provide feedback on morale event	More drinks, please!	

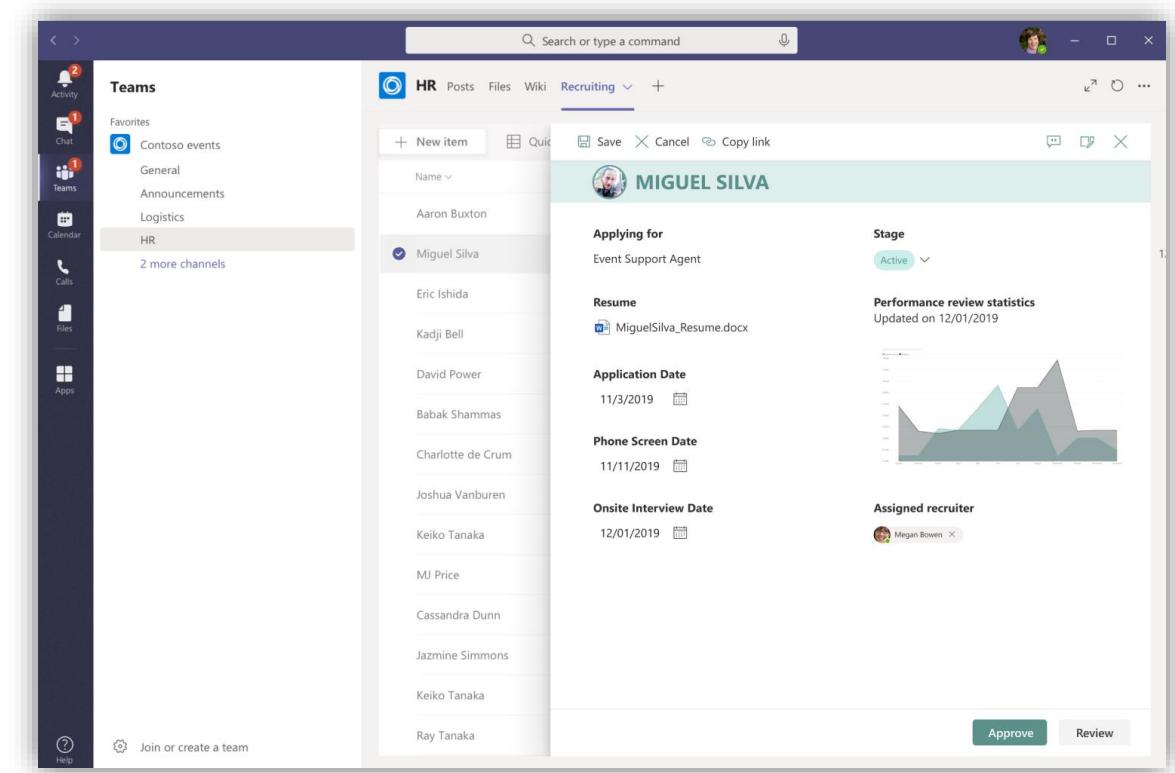
List form configuration

- Configure how a list edit/view form is shown
 - Show, hide and reorder columns
 - Conditional Show/Hide columns
- Resources
 - [Documentation](#)



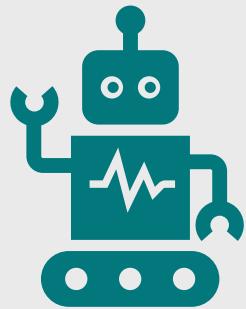
Power Apps integration

- Customize your lists and library forms using Power Apps platform.
- Resources
 - [Microsoft Lists Resource Center](#)
 - [Documentation](#)





Simple
Configuration



Business Process
Automation

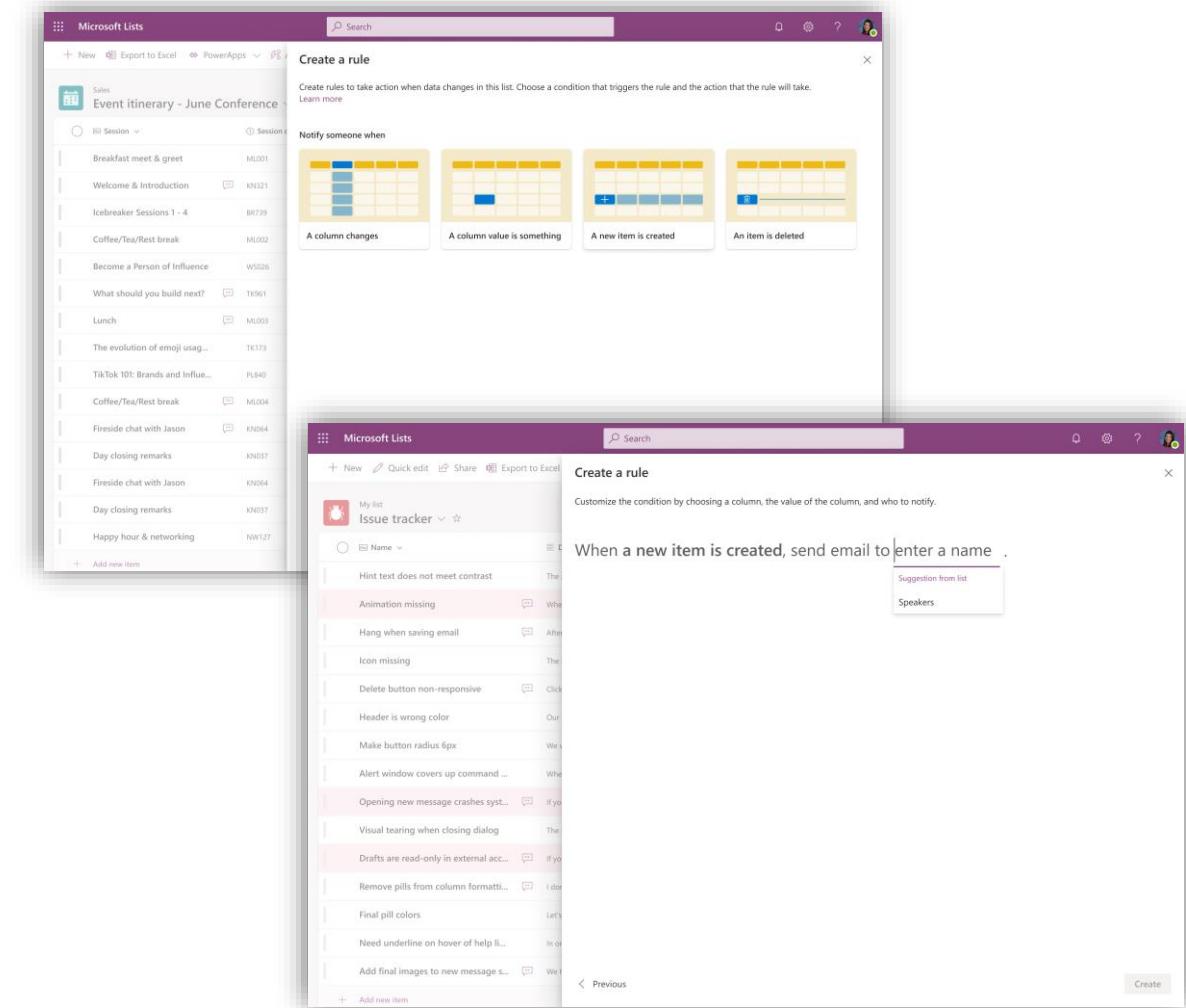


Deep integration
via API's

List rules

- Trigger a notification based upon rules. Notify someone when
 - A column changes
 - A column value changes
 - A new item is created
 - An item is deleted
- Resources
 - [Microsoft Lists Resource Center](#)

Coming soon!



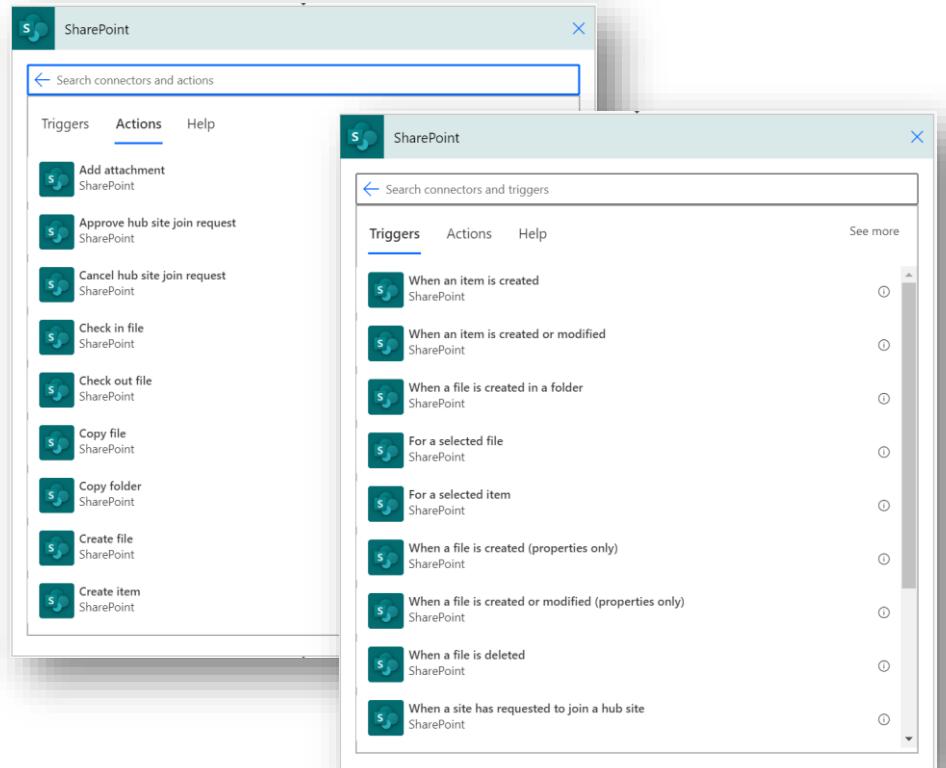
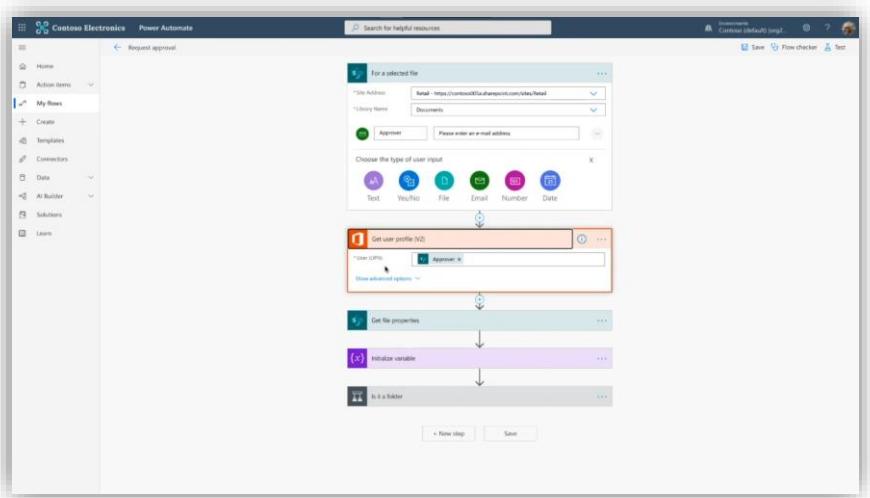
Power Automate integration

- Enable business processes on top of lists & libraries via the SharePoint Connector

- Reminders on date columns
- Sign-off, content and page approvals
- Your custom business process

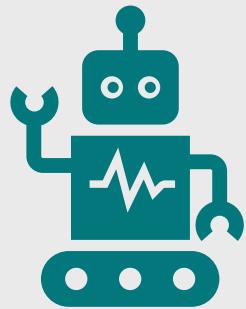
Resources

- [Microsoft Lists Resource Center](#)
- [SharePoint Power Automate Connector](#)





Simple
Configuration



Business Process
Automation



Deep integration
via API's

Basic Microsoft Graph elements

Sites – Contains lists, drives, and subsites

`/v1.0/sites/{site-id}`

List – Contains items, column definitions and content types

ListItem – The item data for the item in a list

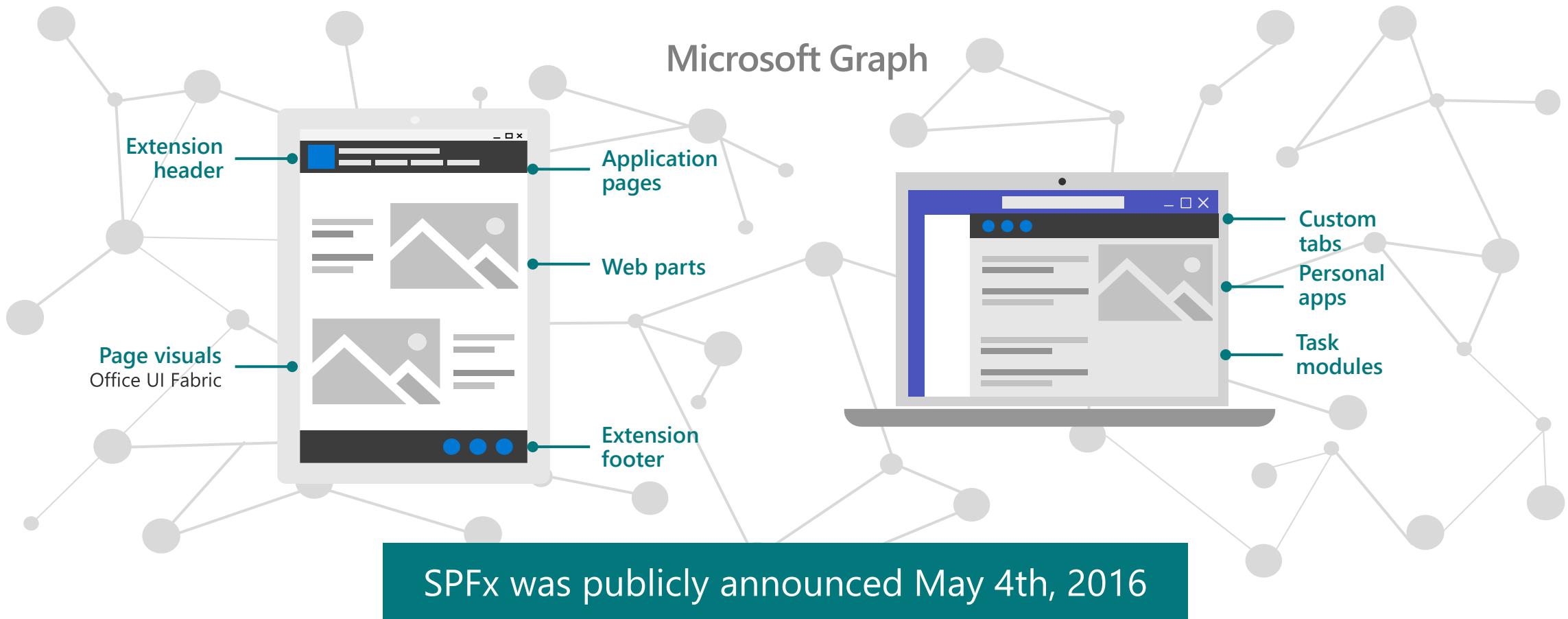
`/v1.0/sites/{site-id}lists/{list-id}/items/{item-id}`

SharePoint Framework

Using SharePoint Framework (SPFx) to extend and enrich the
SharePoint user experience

What is SharePoint Framework?

"An application framework used to build and extend modern experiences in SharePoint and in Microsoft Teams"



SharePoint Framework (SPFX)

Modern client-side development

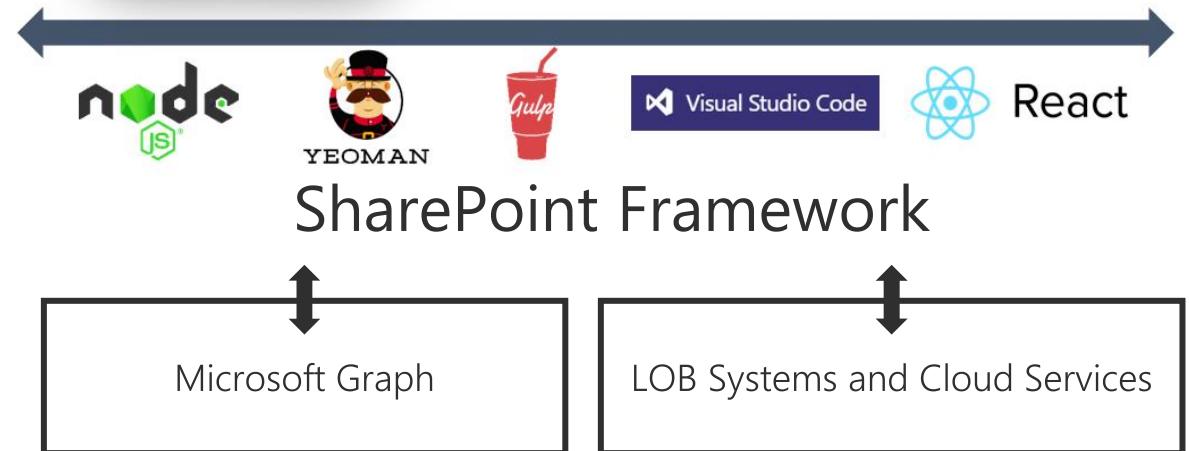
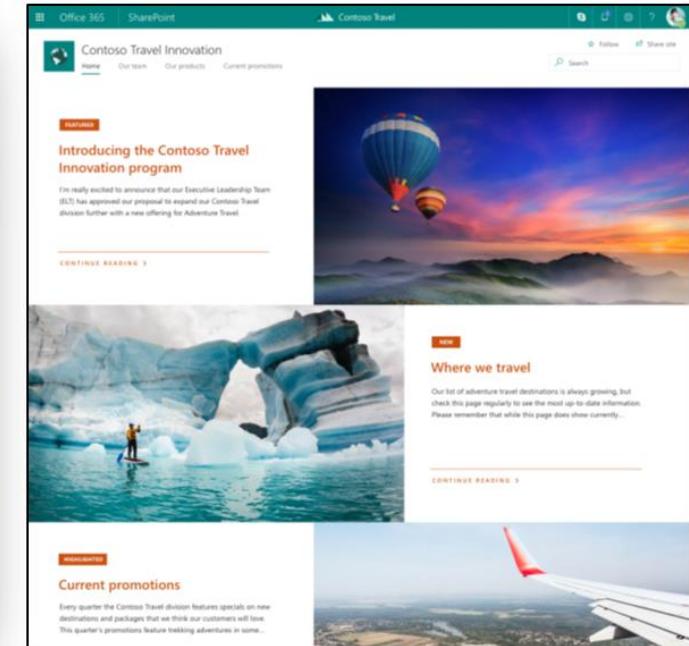
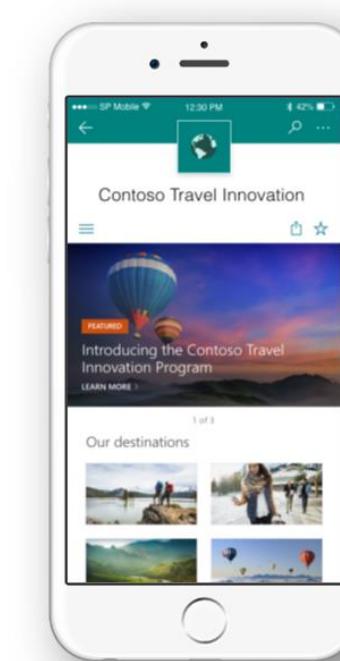
Lightweight web and mobile

Powers our own experiences

Backward compatible

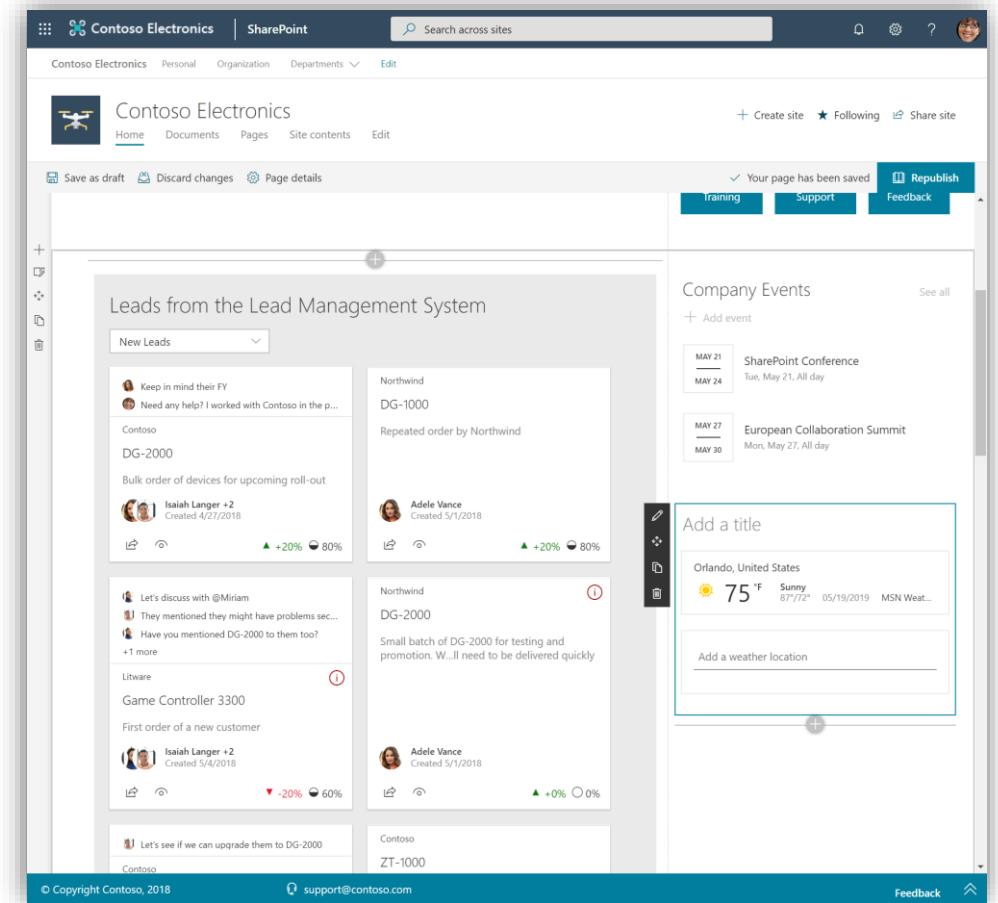
Supports open source tools
and JavaScript web frameworks

<https://aka.ms/spfx-tutorials>



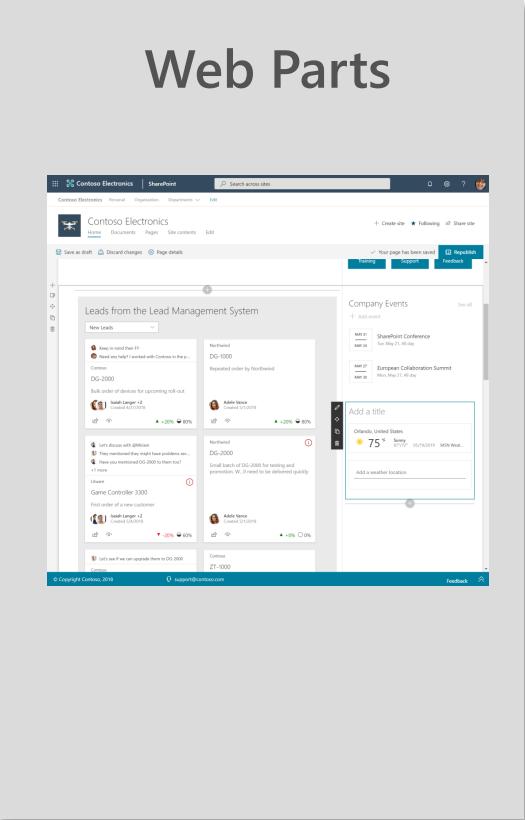
Web parts

- Controls that appear inside a SharePoint page and execute client-side in the browser
- Resources
 - aka.ms/spfx
 - [Develop web parts with the SharePoint Framework](#)
 - [SharePoint Framework Client-Side Web Part Samples & Tutorial Materials](#)

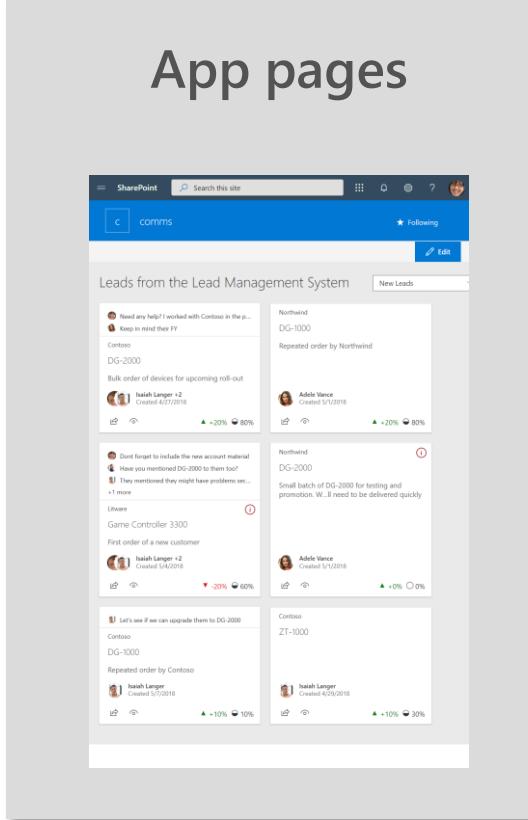


Use Web Parts across services

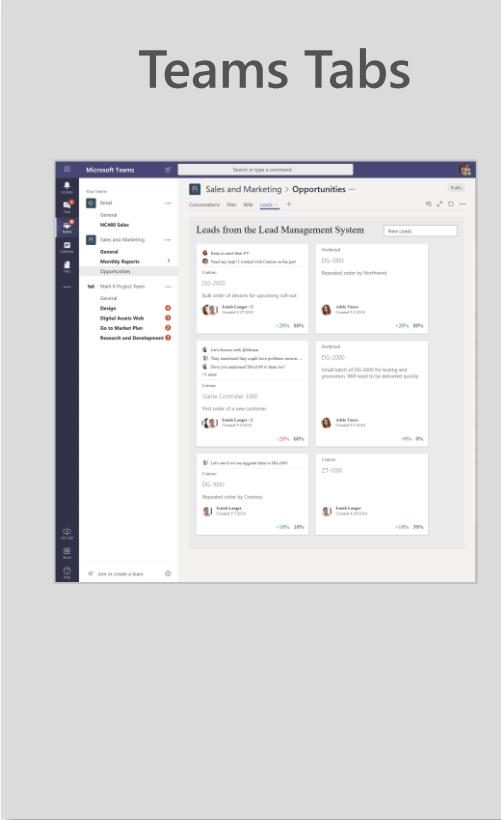
Web Parts



App pages



Teams Tabs

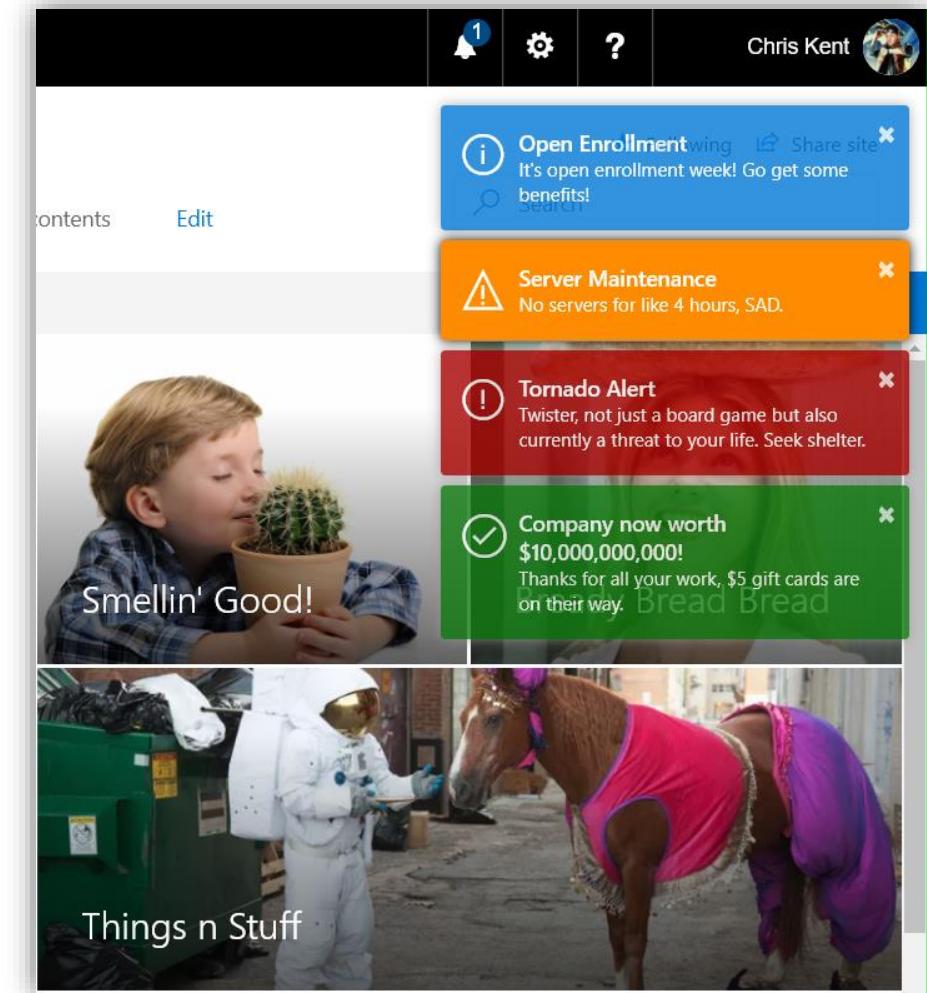


Application Customizers

- Adds scripts to the page, and accesses well-known HTML element placeholders and extends them with custom renderings

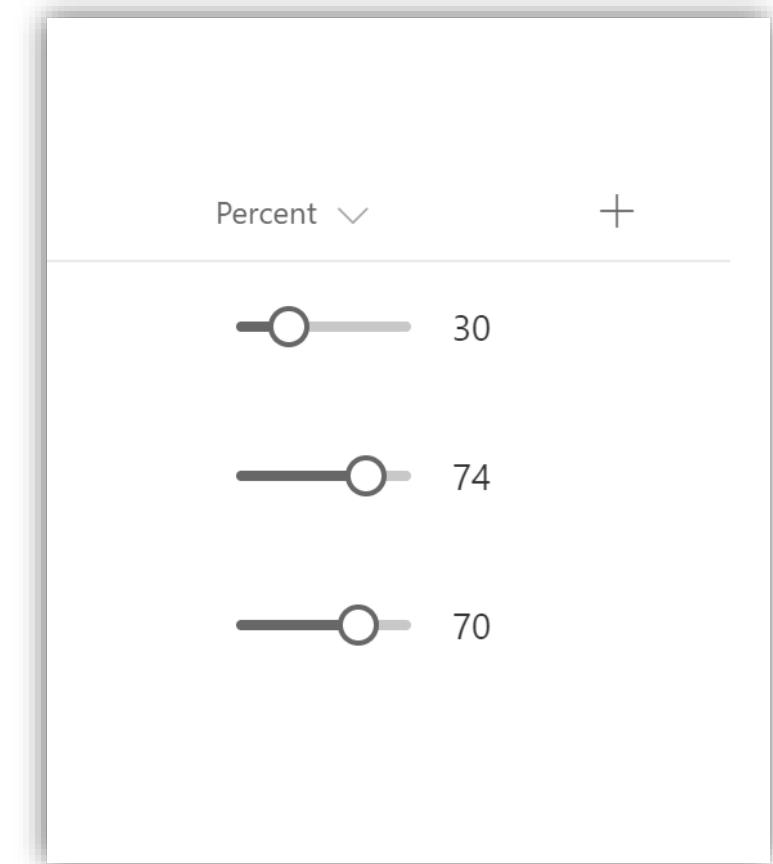
Resources

- aka.ms/spfx
- [Extend the SharePoint user interface with SharePoint Framework extensions](#)
- [SharePoint Framework Extensions Samples & Tutorial Materials](#)



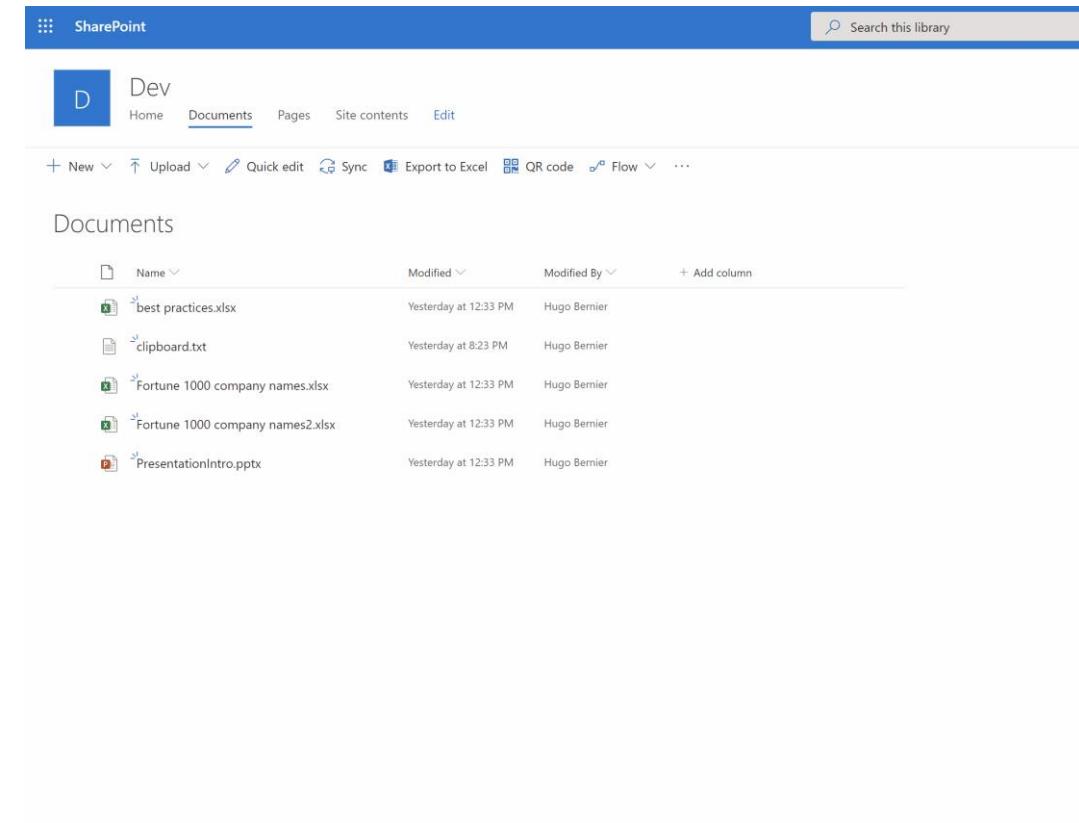
Field Customizers

- Provides modified views to data for fields within a list
- Resources
 - aka.ms/spfx
 - [Extend the SharePoint user interface with SharePoint Framework extensions](#)
 - [SharePoint Framework Extensions Samples & Tutorial Materials](#)



Command Sets

- Extends the SharePoint command surfaces to add new actions, and provides client-side code that you can use to implement behaviors
- Resources
 - aka.ms/spfx
 - [Extend the SharePoint user interface with SharePoint Framework extensions](#)
 - [SharePoint Framework Extensions Samples & Tutorial Materials](#)

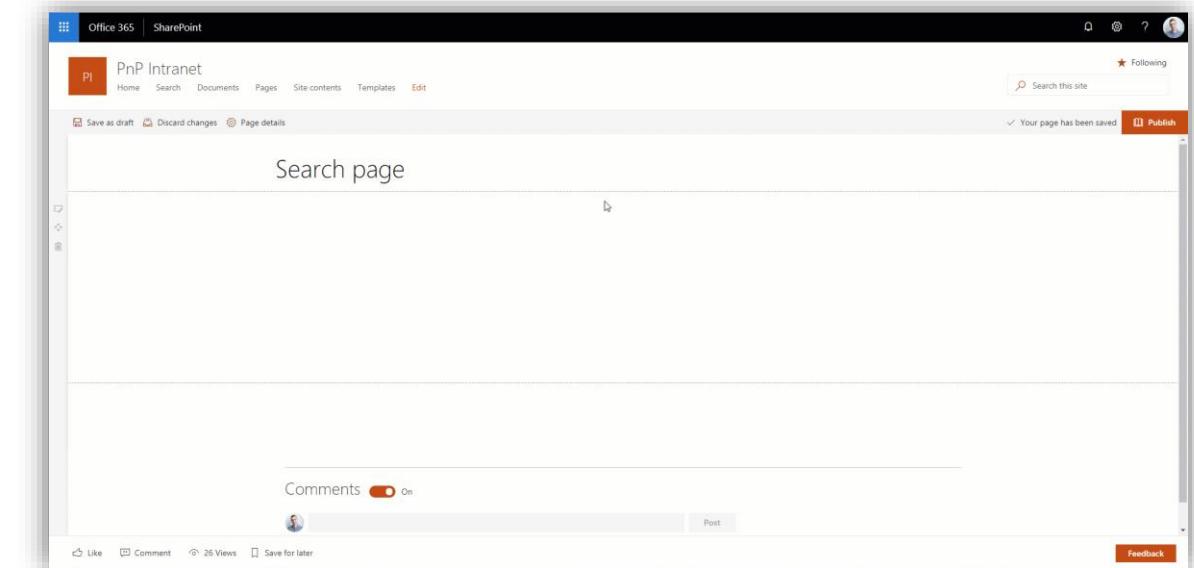


Search Query Extension

- Allows you to manipulate the user's search query before it is sent to SharePoint

- Resources

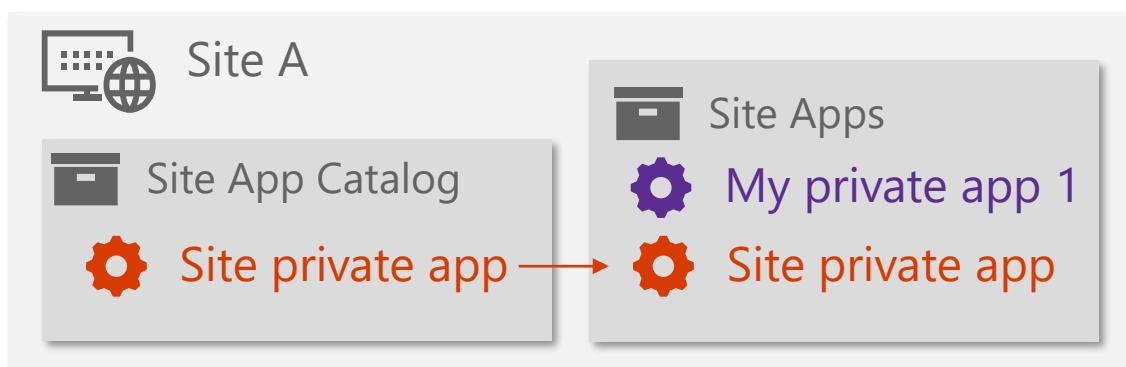
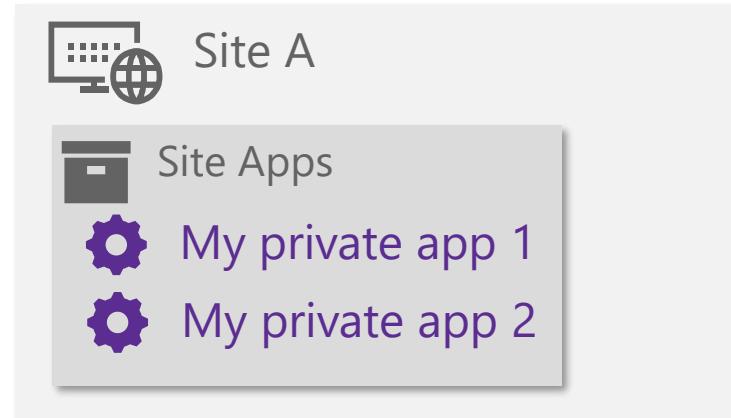
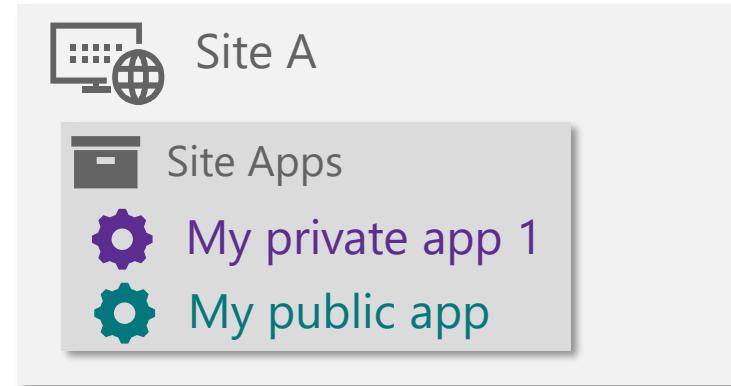
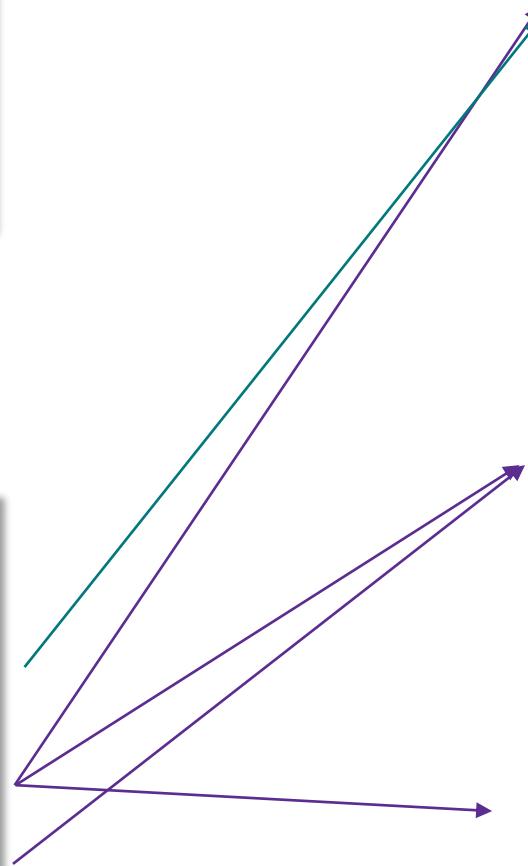
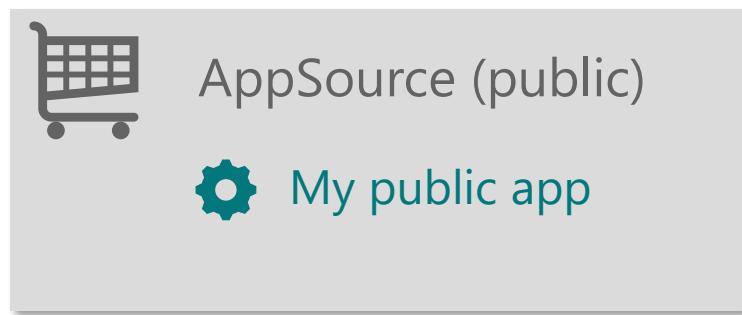
- aka.ms/spfx
- [PnP Modern Search](#)
- [Getting started with Search Query extensions](#)



Deployment and Configuration

Take control over how users create sites, make your apps available to the SharePoint users

App deployment options

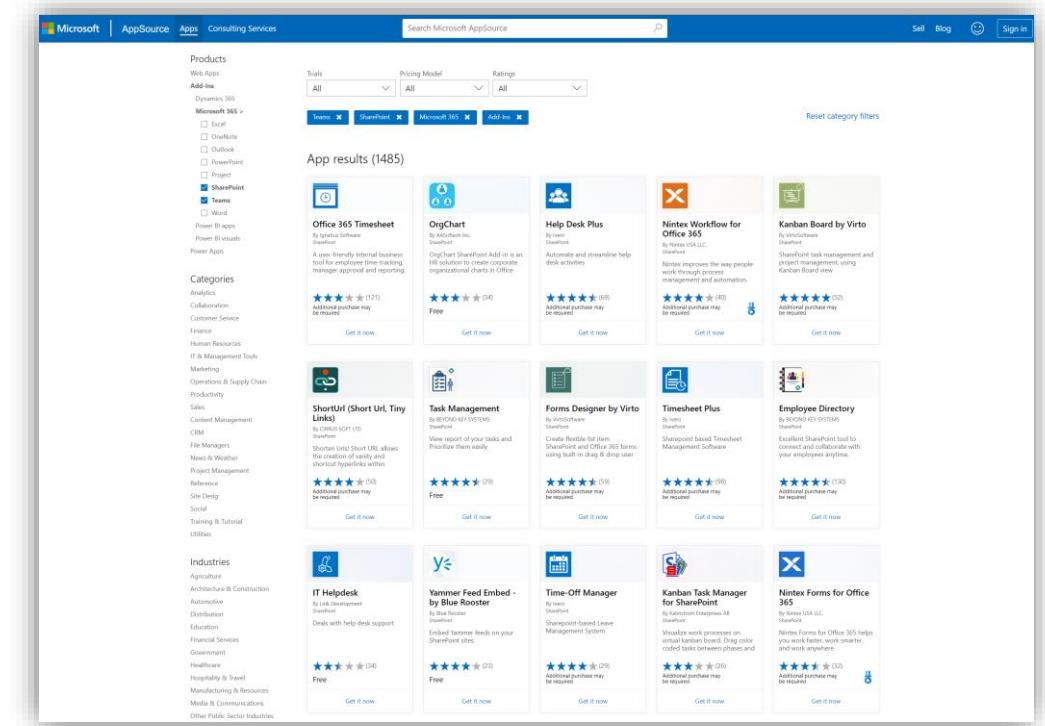


App Source

- Public store for SharePoint, Teams and Office apps

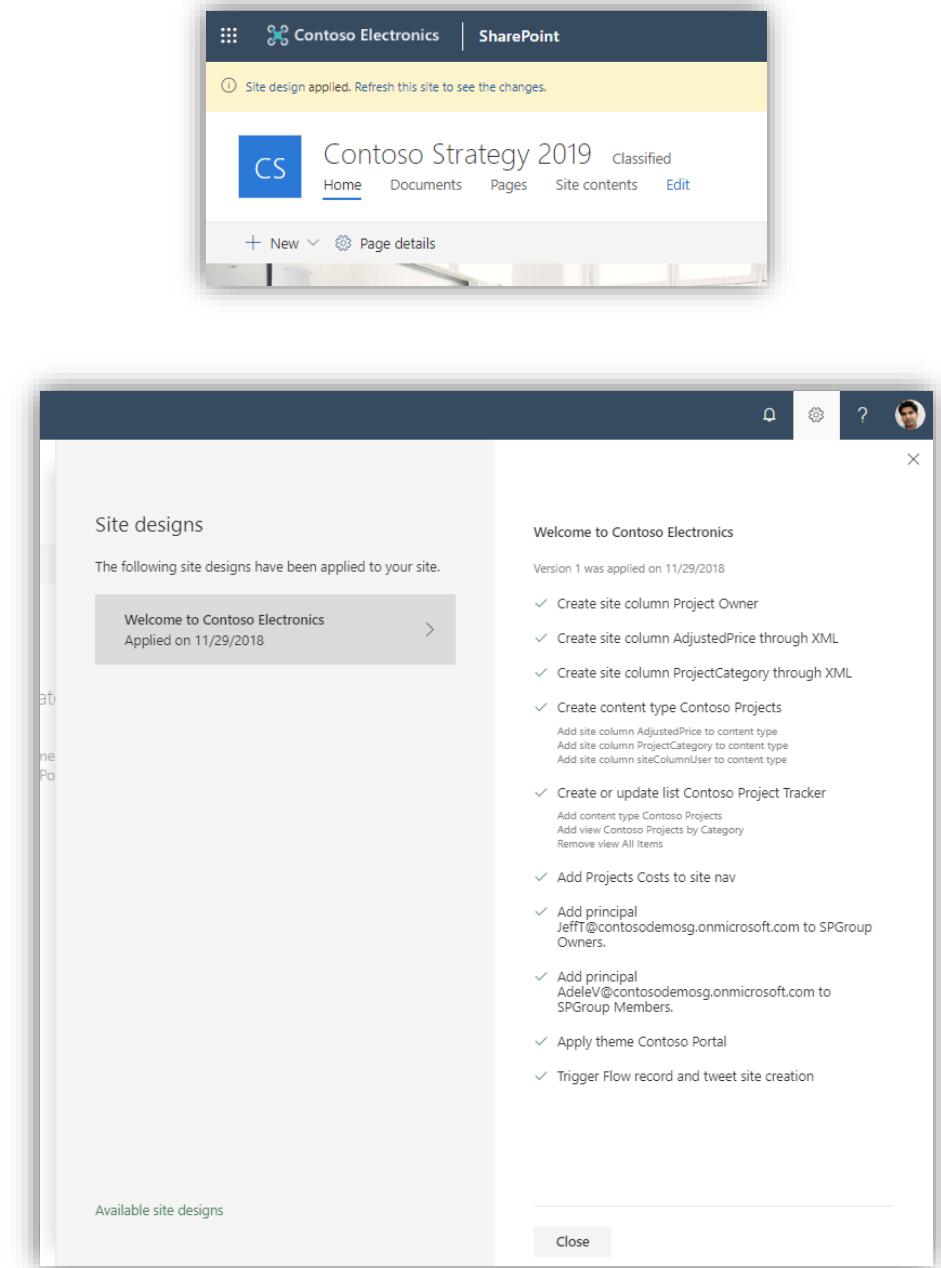
- Resources

- [Documentation](#)
- <https://appsource.microsoft.com/>



Site Designs and Site Scripts

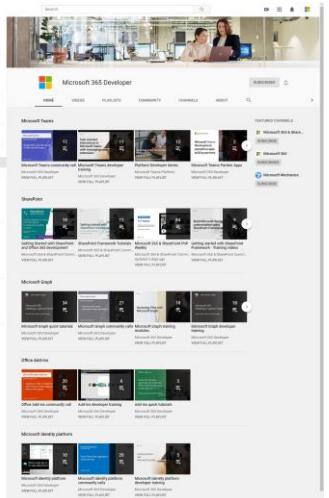
- Automate SharePoint provisioning to new or existing SharePoint
 - Create SharePoint artefacts such as lists, libraries, content types
 - Update navigation and apply branding
 - Configure security
 - Deploy apps
 - Trigger Power Automate for custom coded provisioning tasks
- Resources
 - [Documentation](#)



Open Source Software

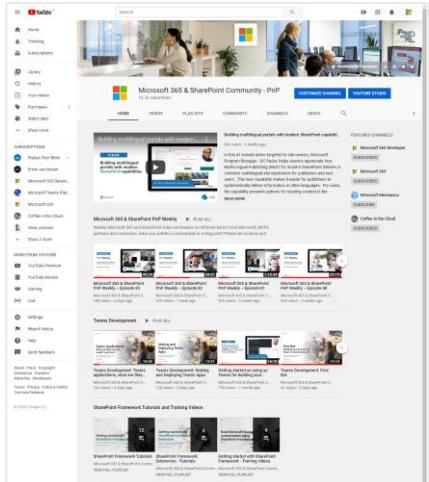
There's a very vibrant community of Microsoft developers building open source for SharePoint, OneDrive and Microsoft Graph

Microsoft 365 developer videos



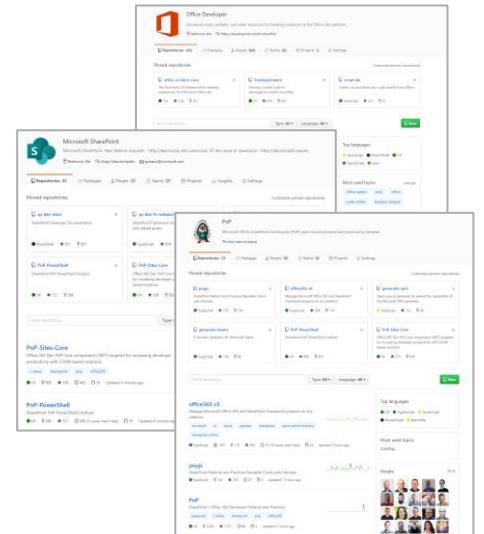
aka.ms/M365DevYouTube

Microsoft 365 & SharePoint community (PnP) videos



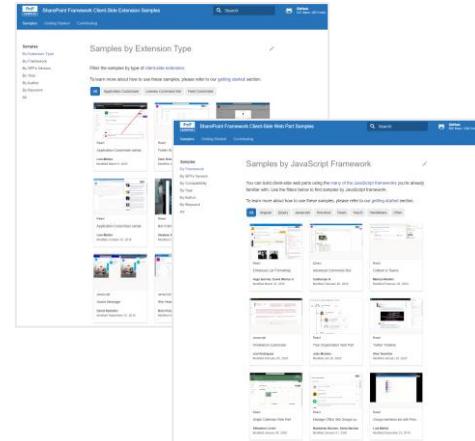
aka.ms/m365pnp-videos

Open-source



github.com/sharepoint
github.com/pnp
github.com/officedev
github.com/microsoftgraph

Sample galleries



aka.ms/spfx-webparts
aka.ms/spfx-extensions
aka.ms/list-formatting
aka.ms/teams-samples

Initiatives



aka.ms/m365pnp

