Microsoft

Building apps for Microsoft SharePoint and OneDrive

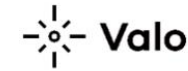Integrate and extend with your application experience

Agenda

Microsoft SharePoint and OneDrive overview and opportunity
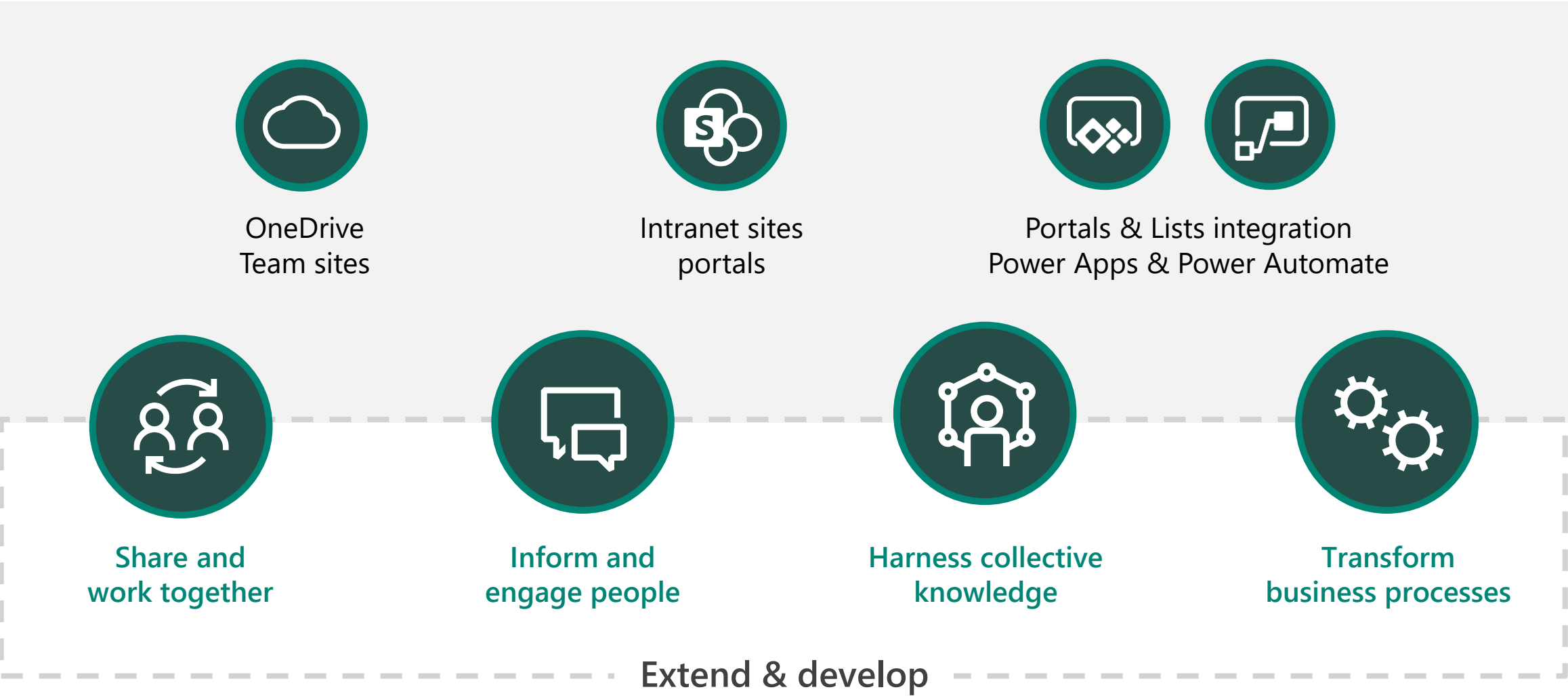
Extensibility scenarios

- Files
- Lists
- SharePoint Framework (SPFx)
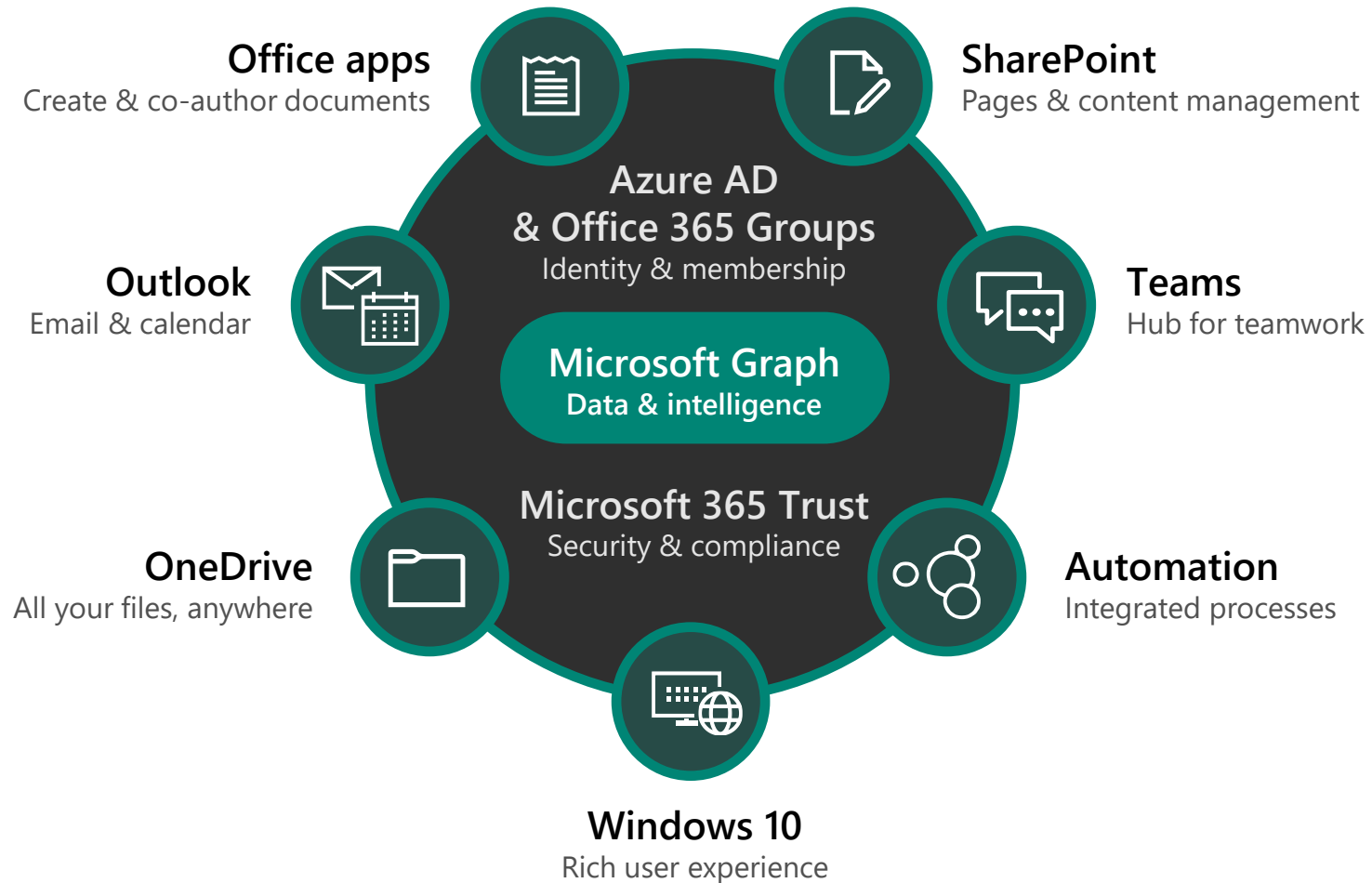- Deployment and configuration
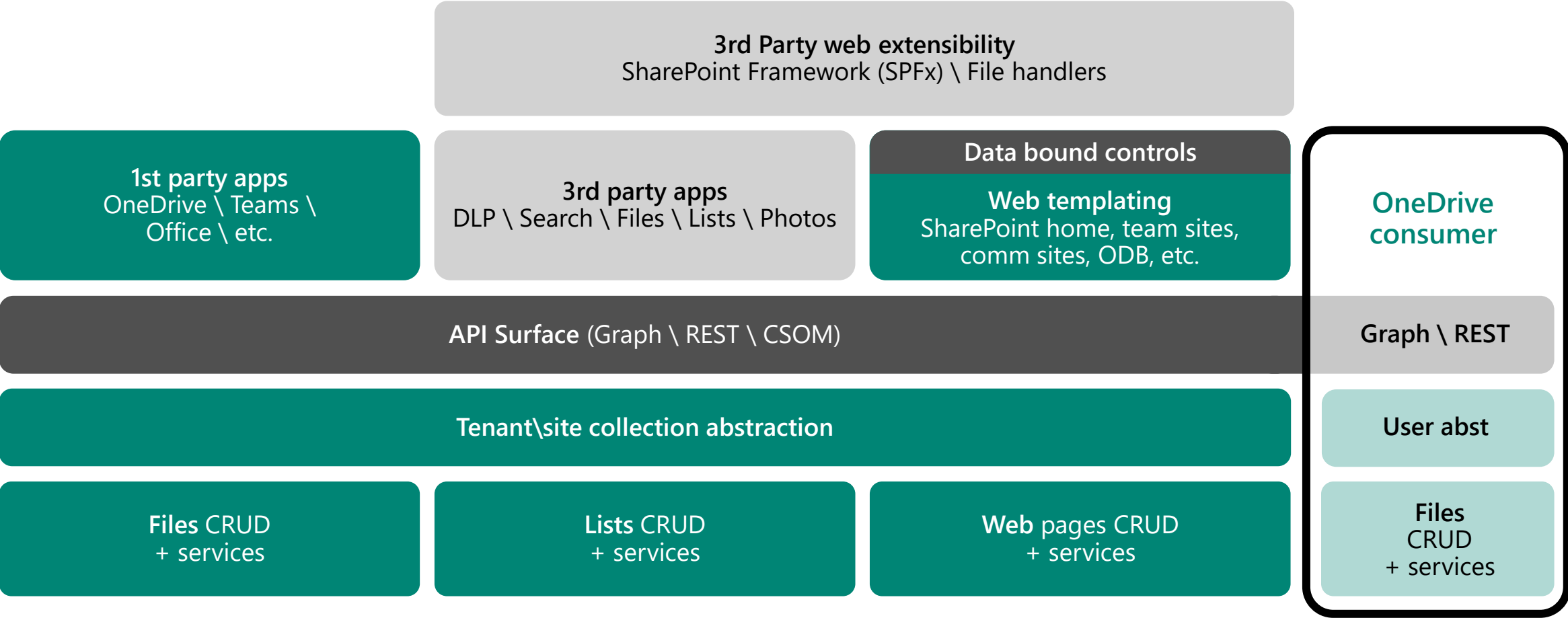- Open source

Partners building with SharePoint and OneDrive

SharePoint and OneDrive

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

Office apps
Create & co-author documents

SharePoint
Pages & content management

Azure AD
& Office 365 Groups
Identity & membership

Outlook
Email & calendar

Teams
Hub for teamwork

Microsoft Graph
Data & intelligence

Microsoft 365 Trust
Security & compliance

OneDrive
All your files, anywhere

Automation
Integrated processes

Windows 10
Rich user experience

SharePoint & OneDrive functional design

3rd Party web extensibility
SharePoint Framework (SPFx) \ File handlers

1st party apps
OneDrive \ Teams \ Office \ etc.

3rd party apps
DLP \ Search \ Files \ Lists \ Photos

Data bound controls

Web templating
SharePoint home, team sites, comm sites, ODB, etc.

OneDrive consumer

API Surface (Graph \ REST \ CSOM)

Graph \ REST

Tenant\site collection abstraction

User abst

Files CRUD + services

Lists CRUD + services

Web pages CRUD + services

Files CRUD + services

Files extensibility scenarios

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

Files

- File preview

- No additional infrastructure for hosting

- Maintain a focus on your app while we do the rest

- Government and industry compliant
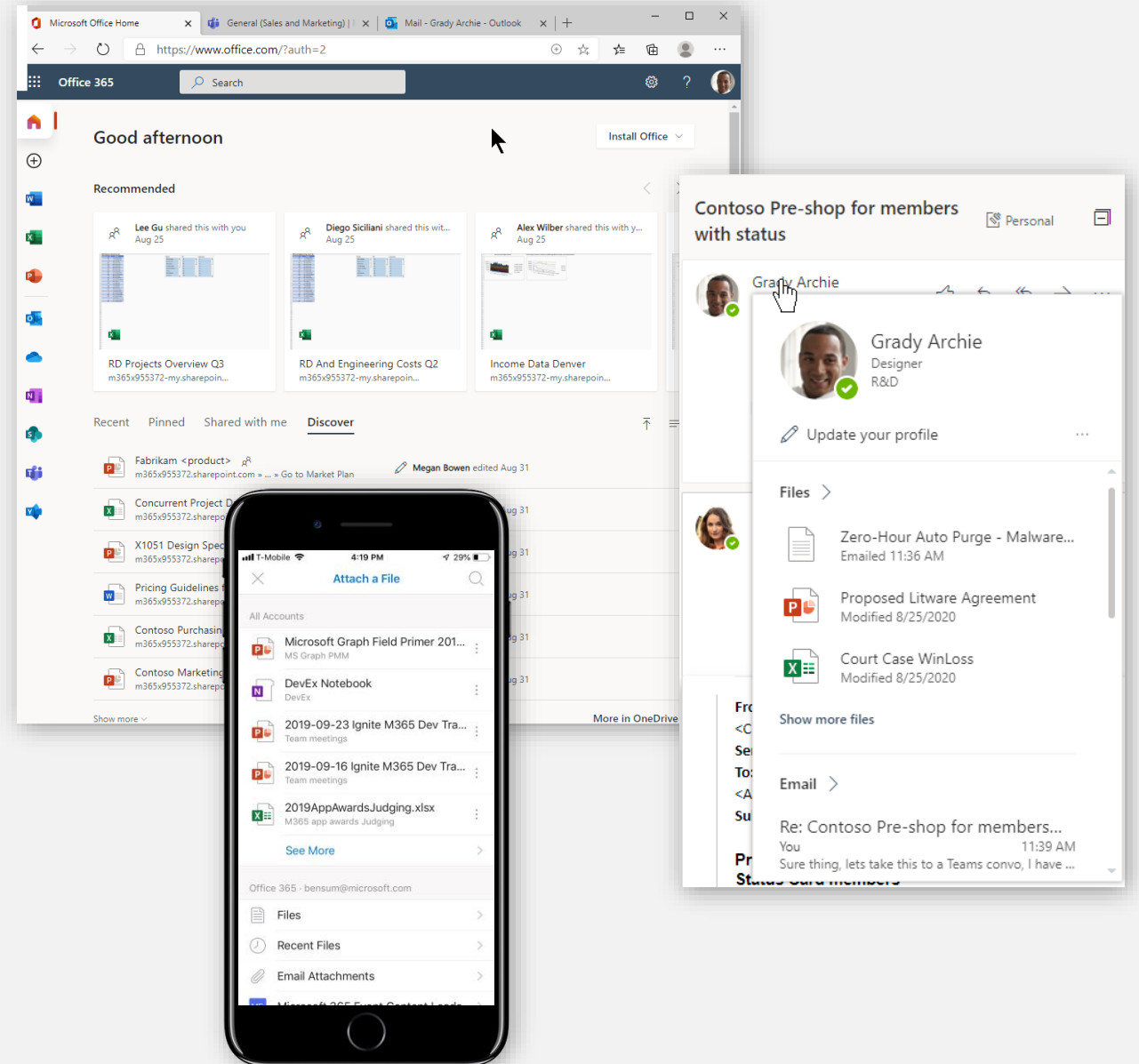
Improved turbocharged SharePoint file storage

10X
faster downloads

3X
performance

30x
faster indexing

320+
file types

← AI-powered insights —— Intelligent security —— Innovative experiences →
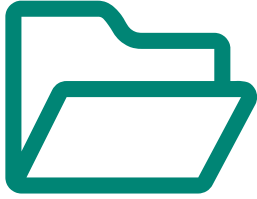
Viewing, selecting and uploading files
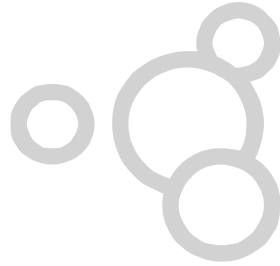
Deep integration via API's

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

Opening files documentation
SPFX sample

A new picker experience is in progress
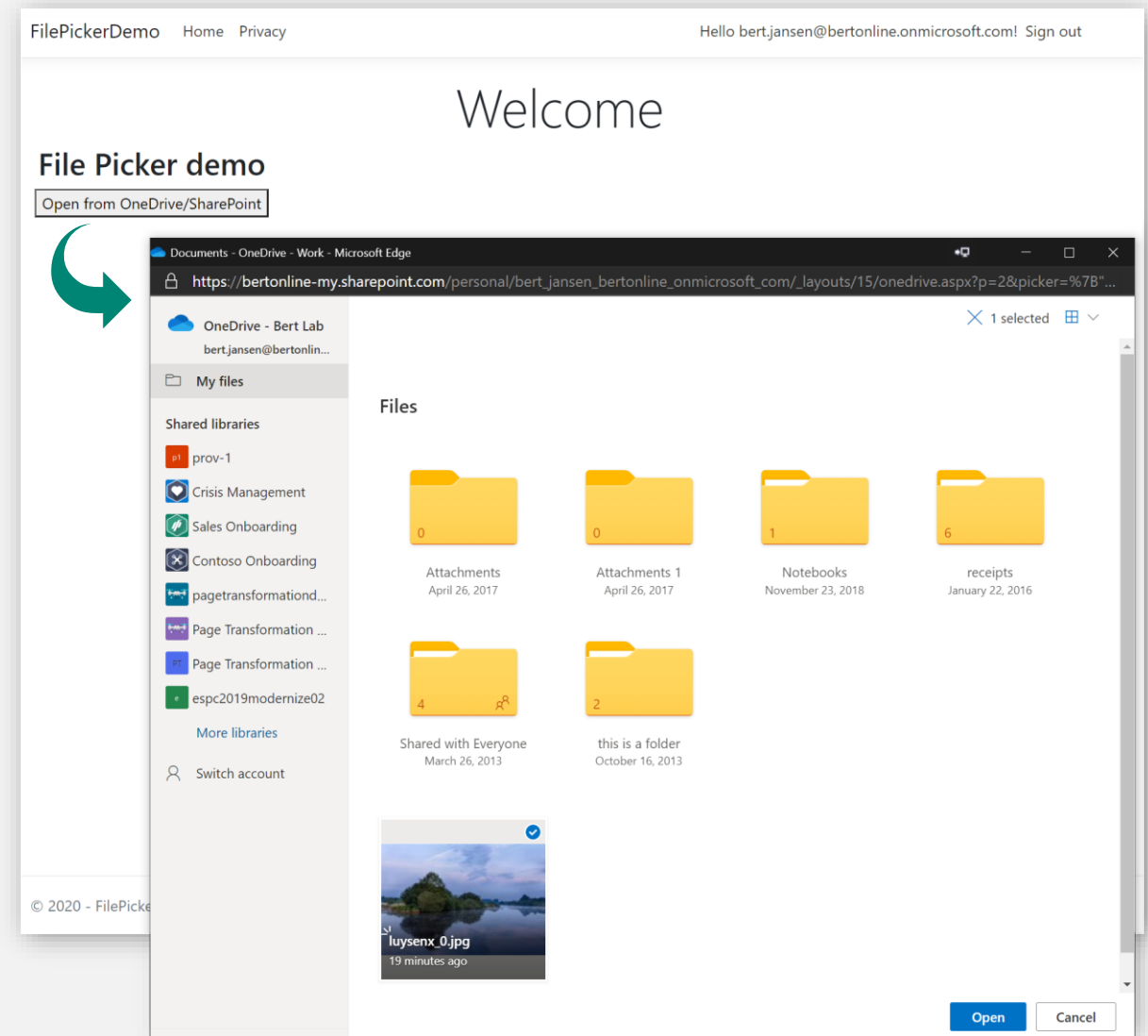
Uploading files

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

Saving files documentation
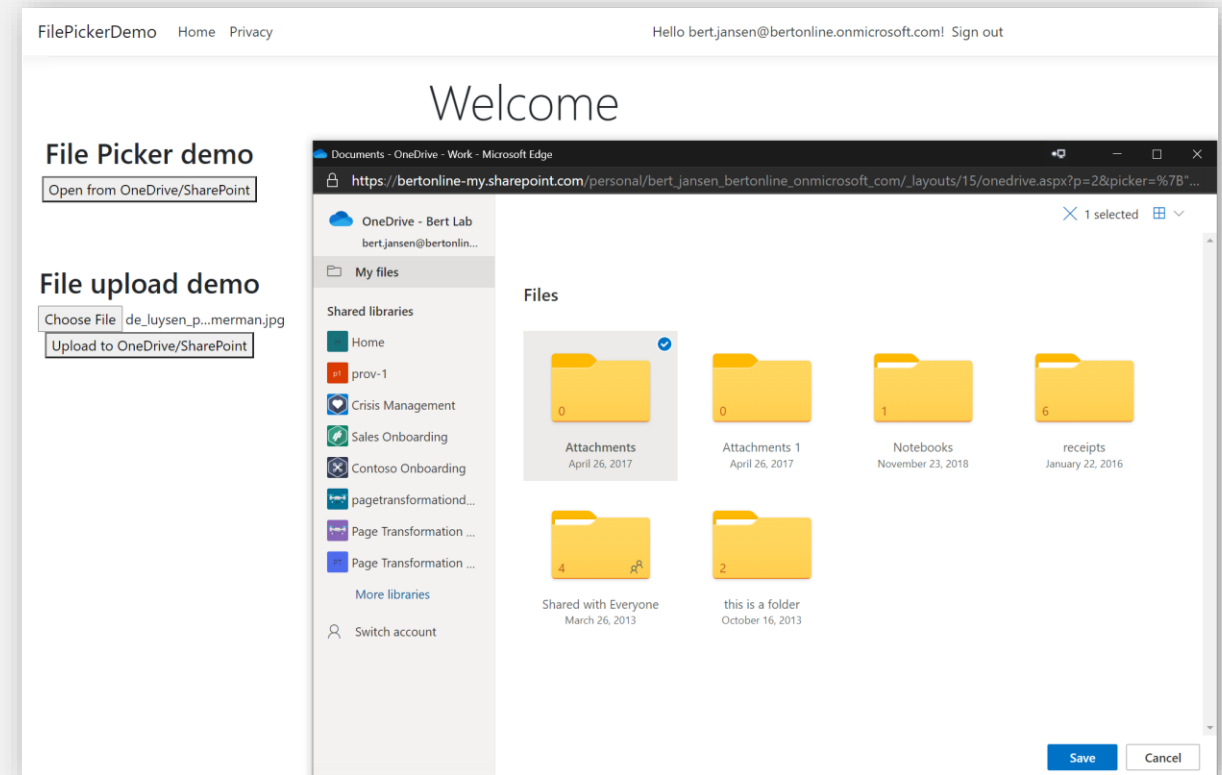
A new picker experience is in progress

Browsing files

Embed a browsing control in your application that works similar as the browsing files in Microsoft's products like Office, SharePoint and Teams
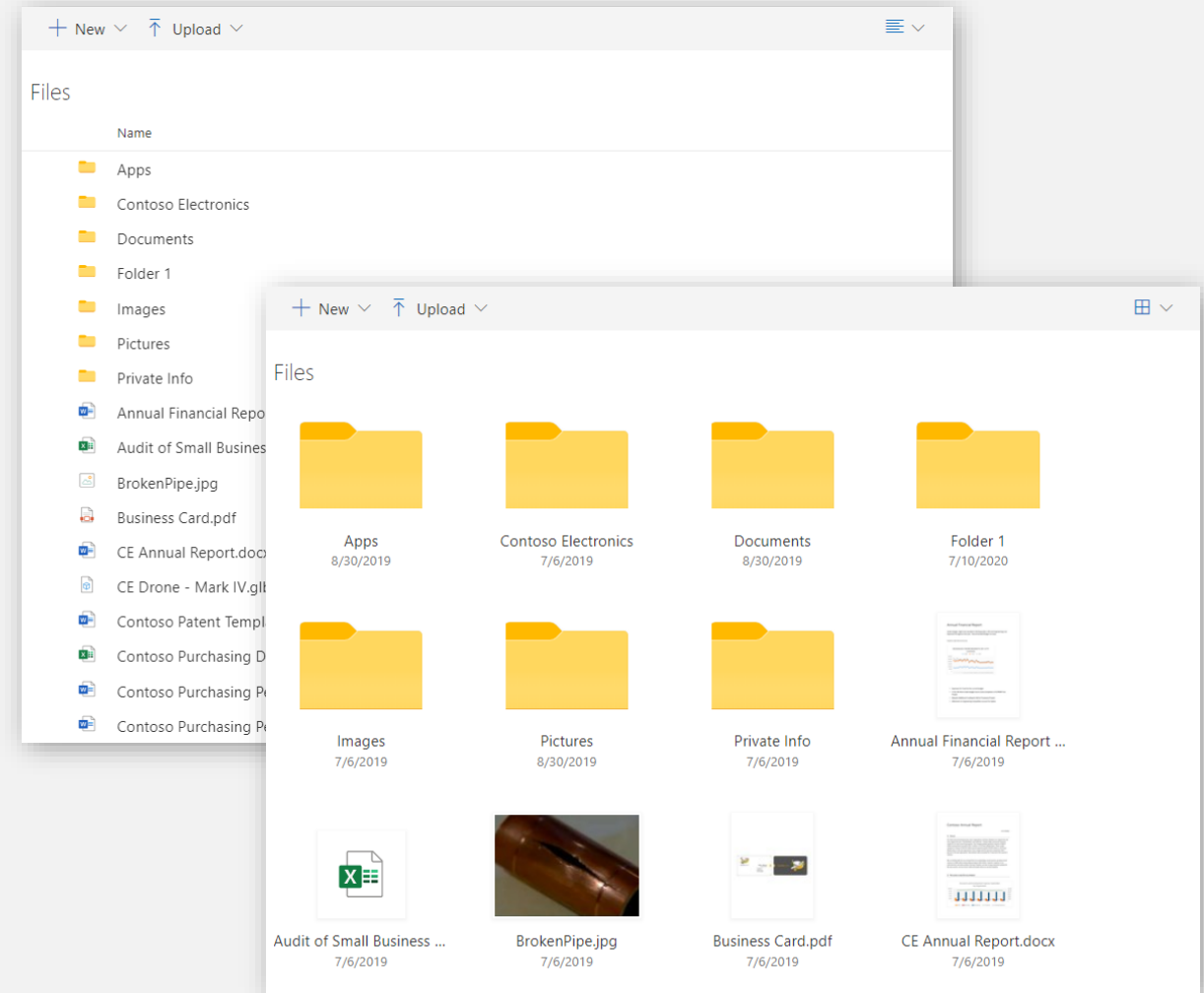
Coming to preview soon!

Viewing, selecting and uploading files
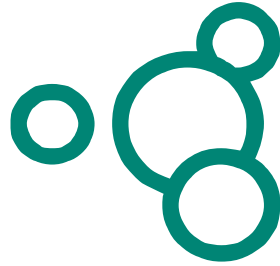
Deep integration via API's

Owning my file types

Single source for personal and corporate data
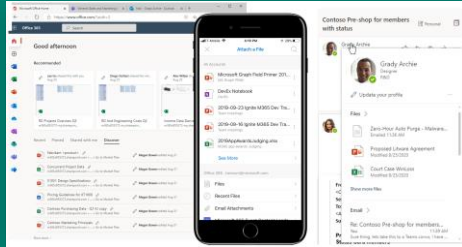
Files (drive/drive item) represents an item within a drive, like a document, photo, video, or folder

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

Microsoft Graph

Use in a file picker
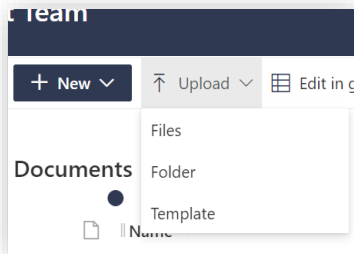
Native file viewing
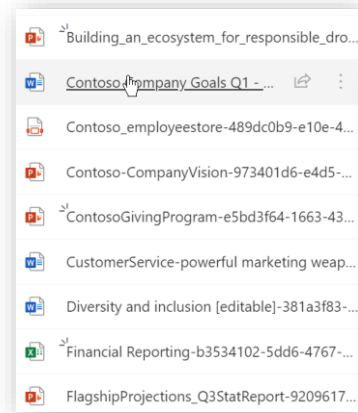
Integrated search Exp.
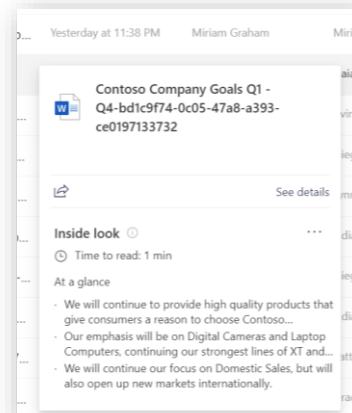
Doc gen & save

Native file syncing
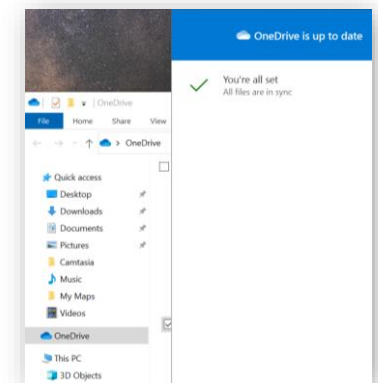
Basic Microsoft Graph elements

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

[File documentation](#)
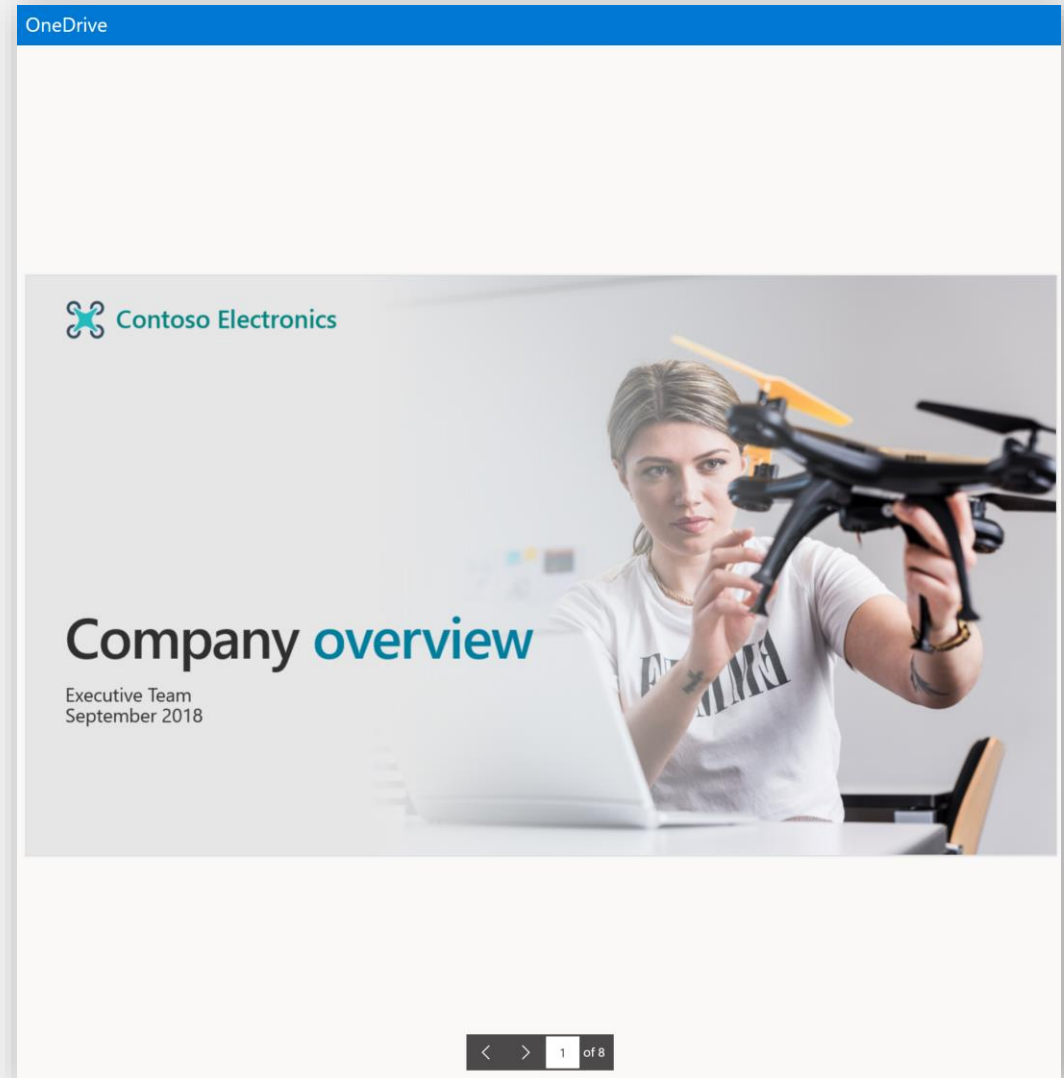
File thumbnails

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

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

Resources

[File thumbnails documentation](#)
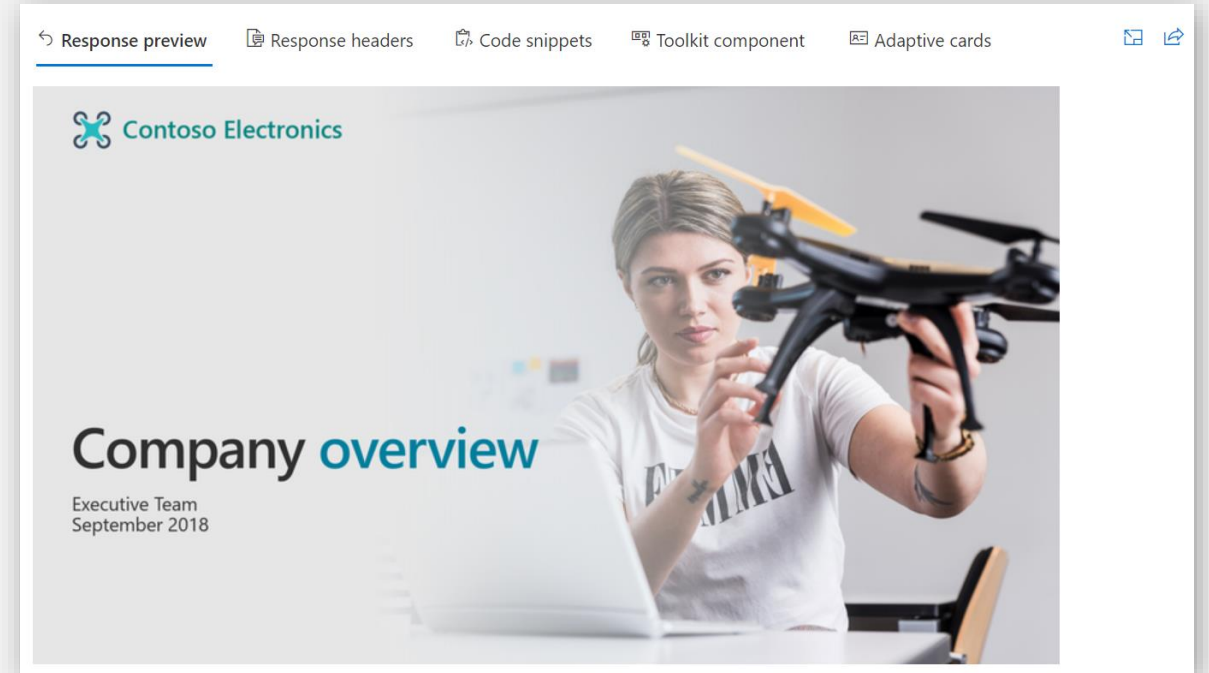
Subscriptions and delta queries

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

Subscription's documentation
Delta query documentation
OneDrive files integration sample (.NET)
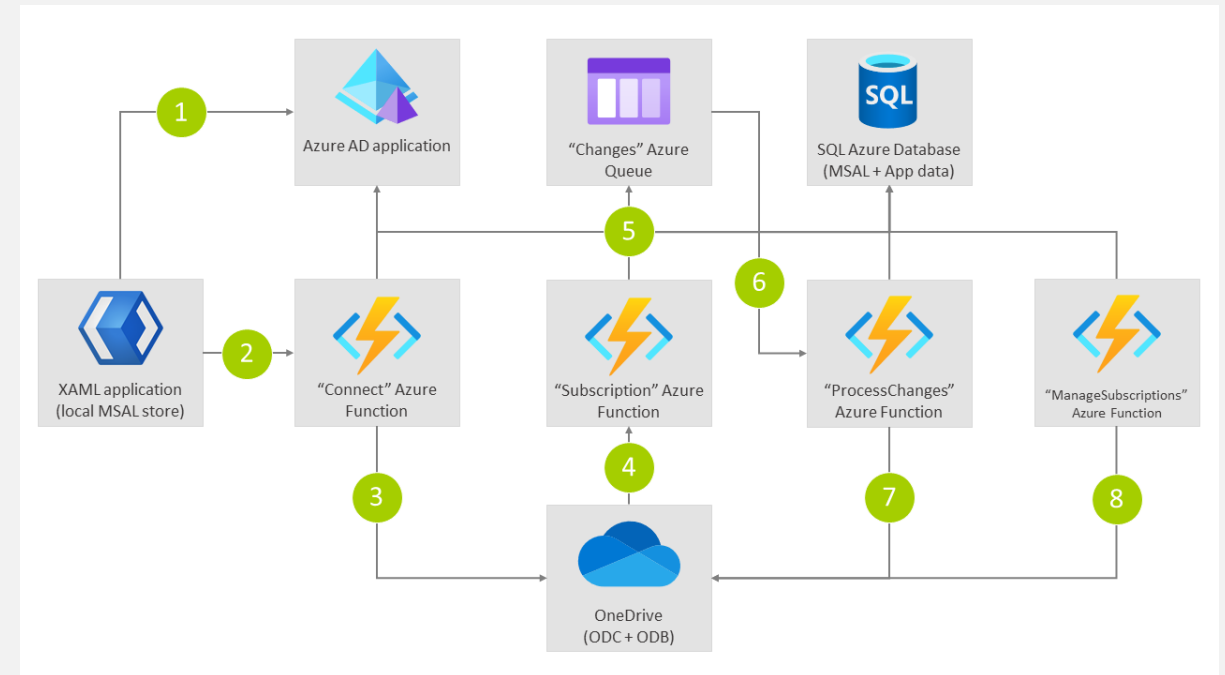
Scan guidance

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

Resources

Scan guidance documentation

Delta query documentation
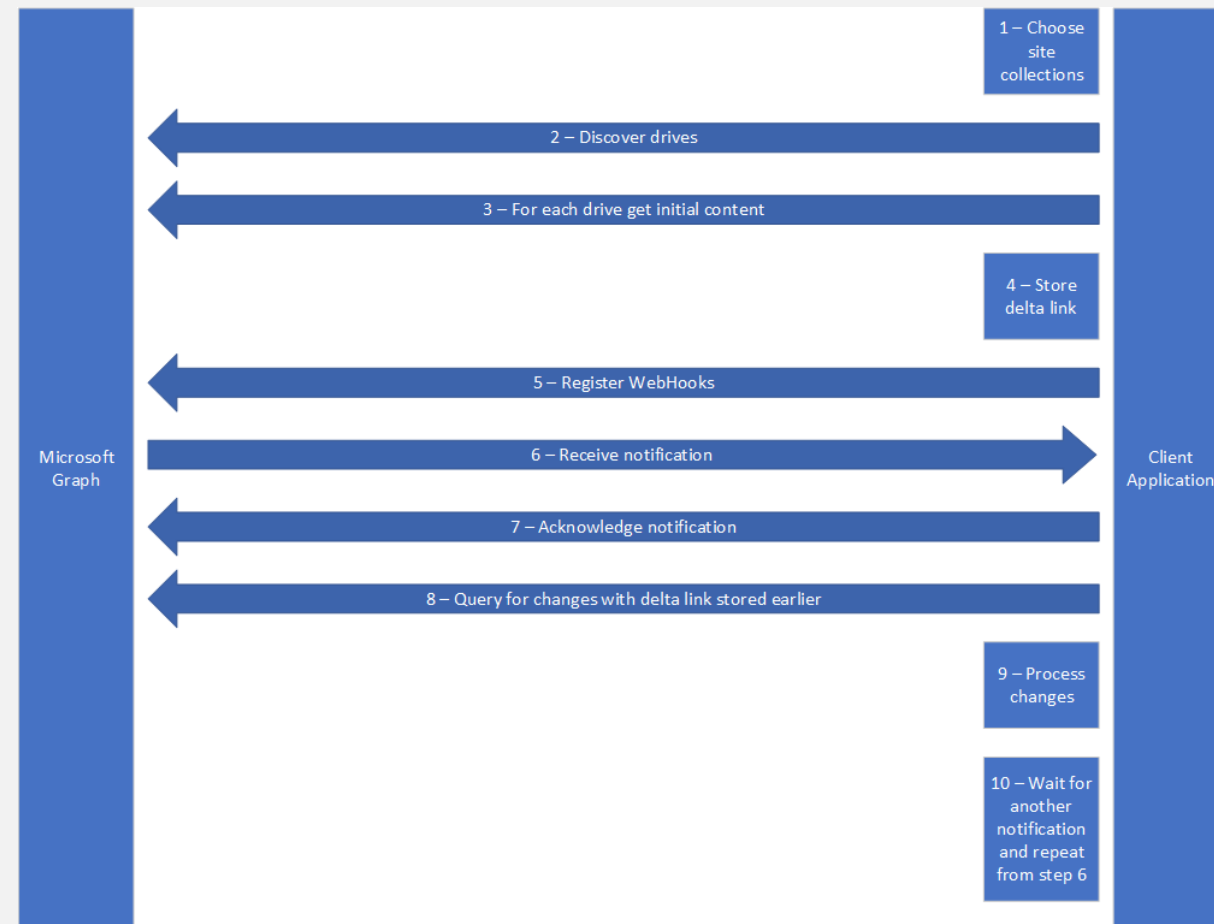
Viewing, selecting and uploading files
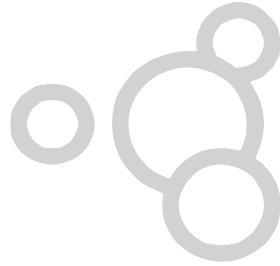
Deep integration via API's

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

File handlers documentation
Markdown sample file handler
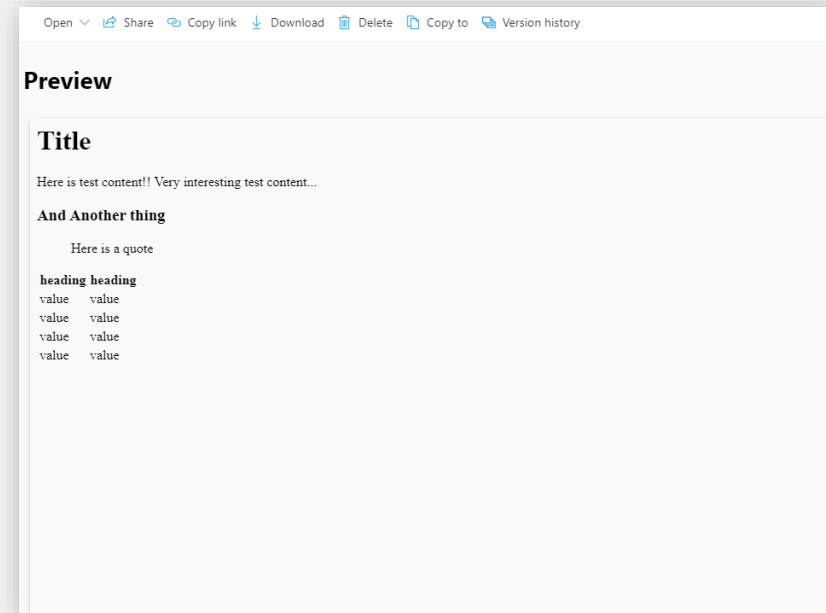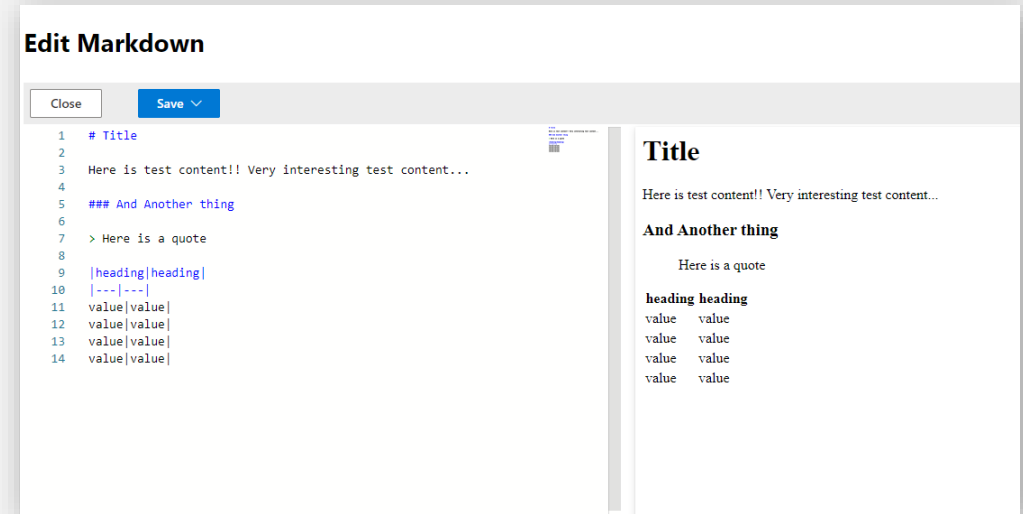
Graph connectors

Enables ISV/third party specific data
to appear in Microsoft search results

- Index your file data
- 9 Microsoft built connectors – 100+ 3rd party connectors

Resources

[Graph connector documentation](#)
[Microsoft Graph connectors gallery](#)
[Graph connector dotnet sample](#)
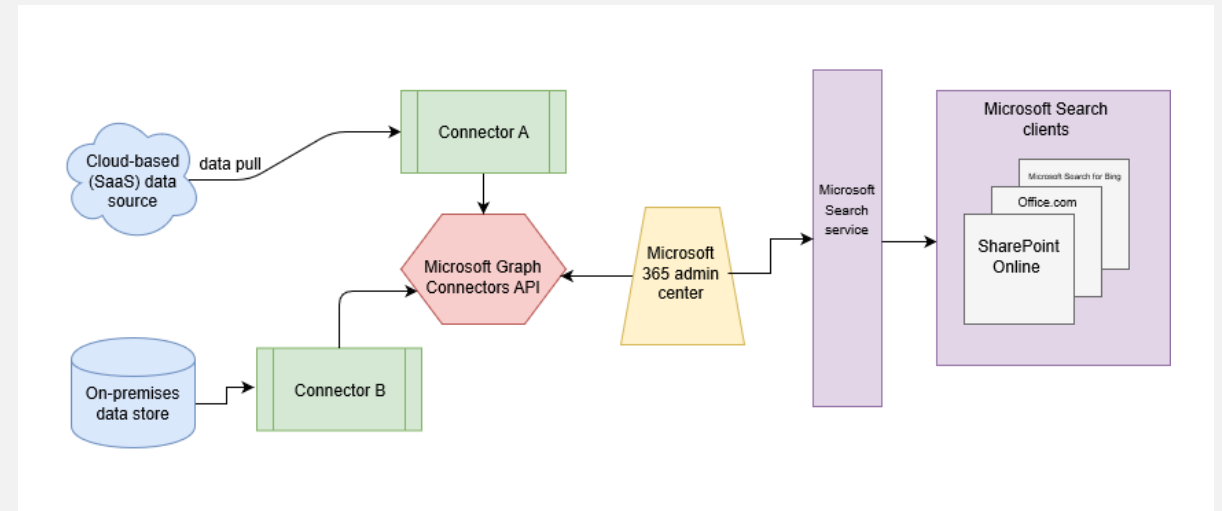
List extensibility scenarios

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

Empowering business processes via Lists
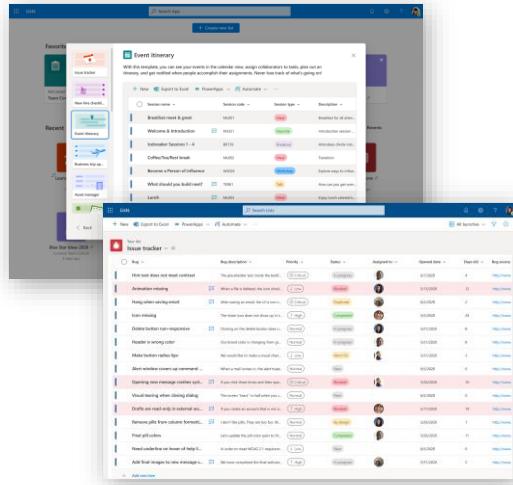
Native efficiency

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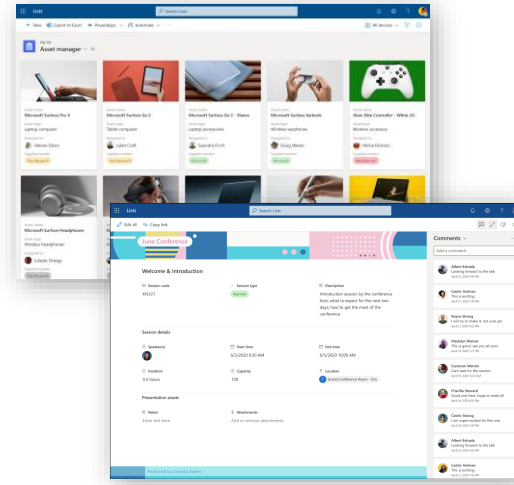
Simple configuration

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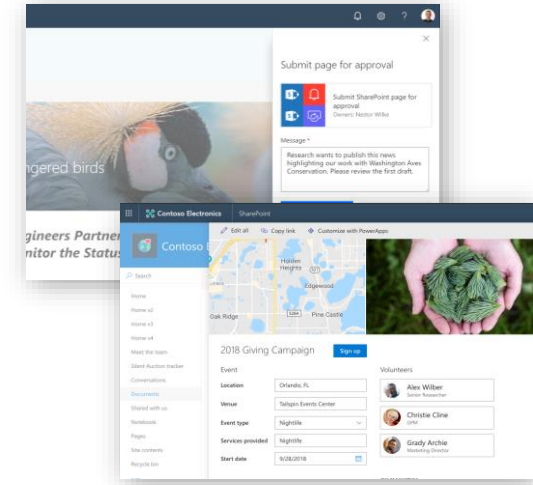
Integrated solutions

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

Continuum

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
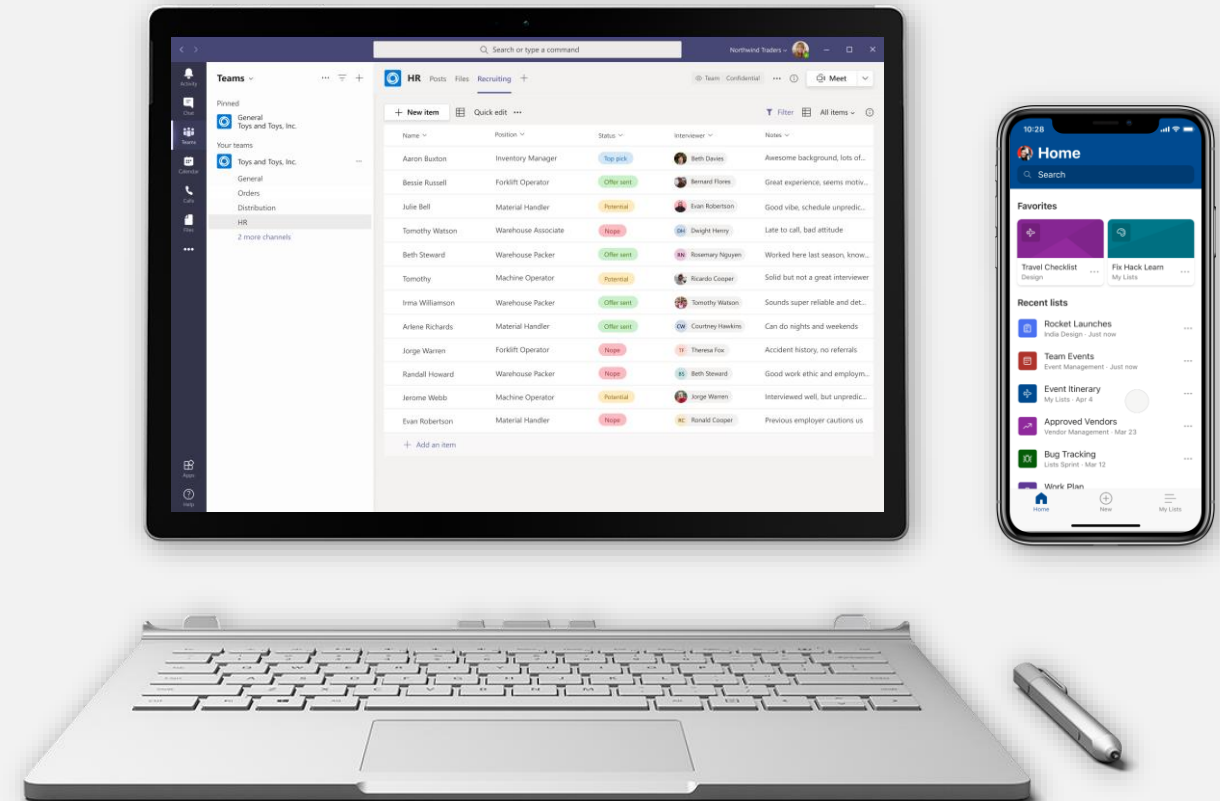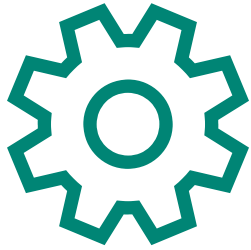
Simple configuration
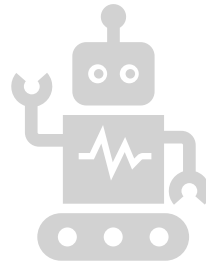
Business process automation
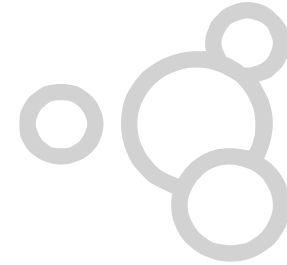
Deep integration via API's

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

Resources

[Column formatting documentation](#)

[List formatting samples](#)

For more advanced scenarios involving custom code, checkout [SPFX Field Customizers](#)

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

[List formatting documentation](#)
[List formatting samples](#)

List form configuration

Configure how a list edit/view form is shown

- Show, hide and reorder columns
- Conditional Show/Hide columns
- Use JSON to format form header/footer and create sections in the form

Resources

List form documentation
Configure the List form using formatting
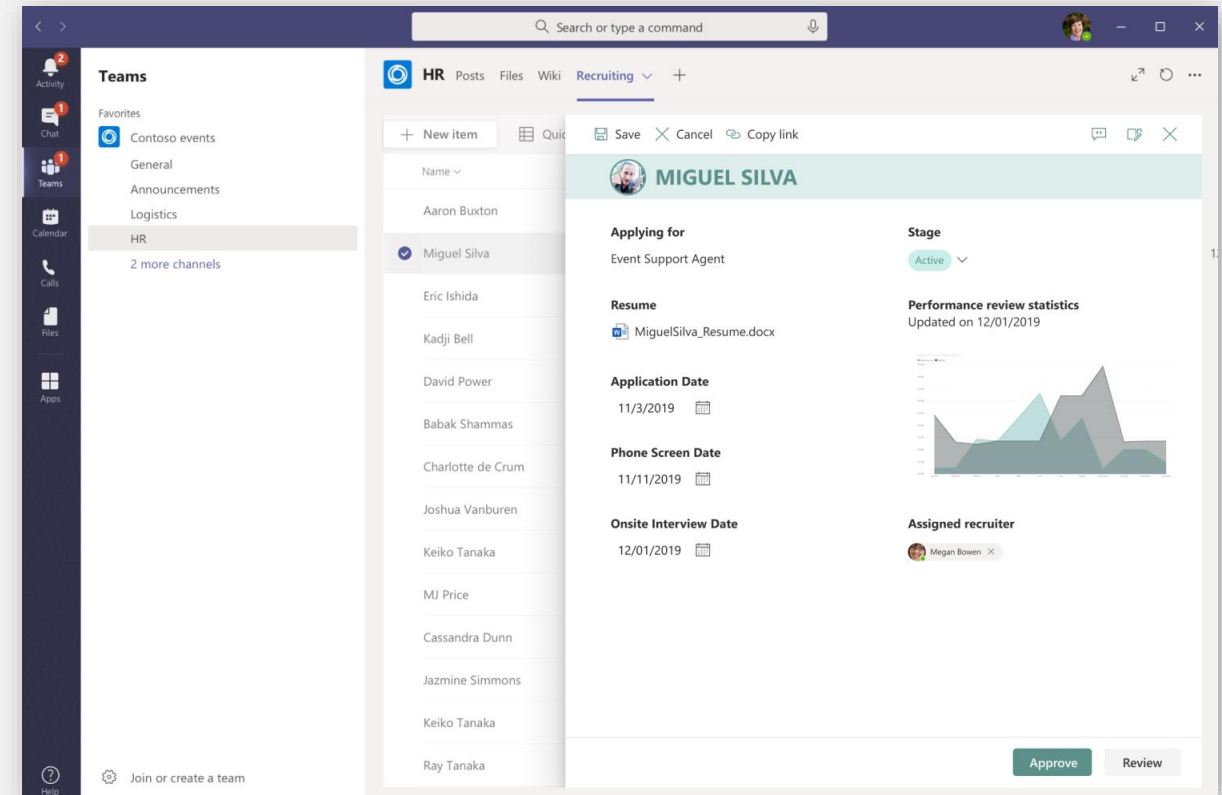List formatting samples

Power Apps integration

Customize your lists and library forms using Power Apps platform.

Resources

Power Apps documentation
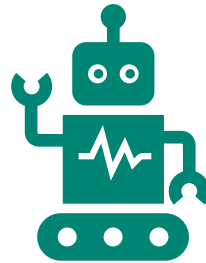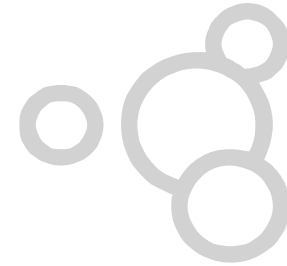Microsoft Lists Resource Center
Power Platform samples

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
Create a rule to automate a list

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](#)
[Power Platform samples](#)

Simple configuration
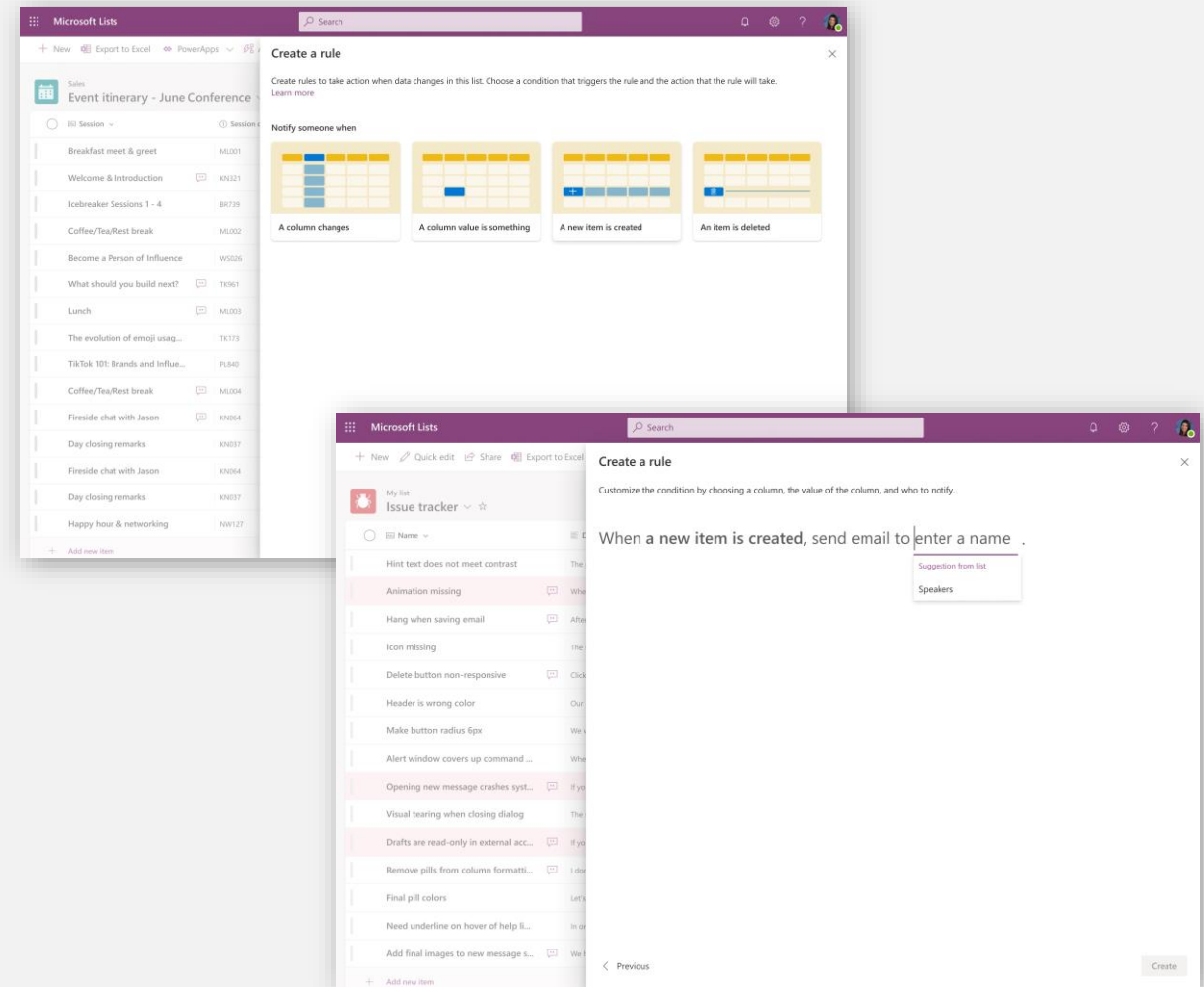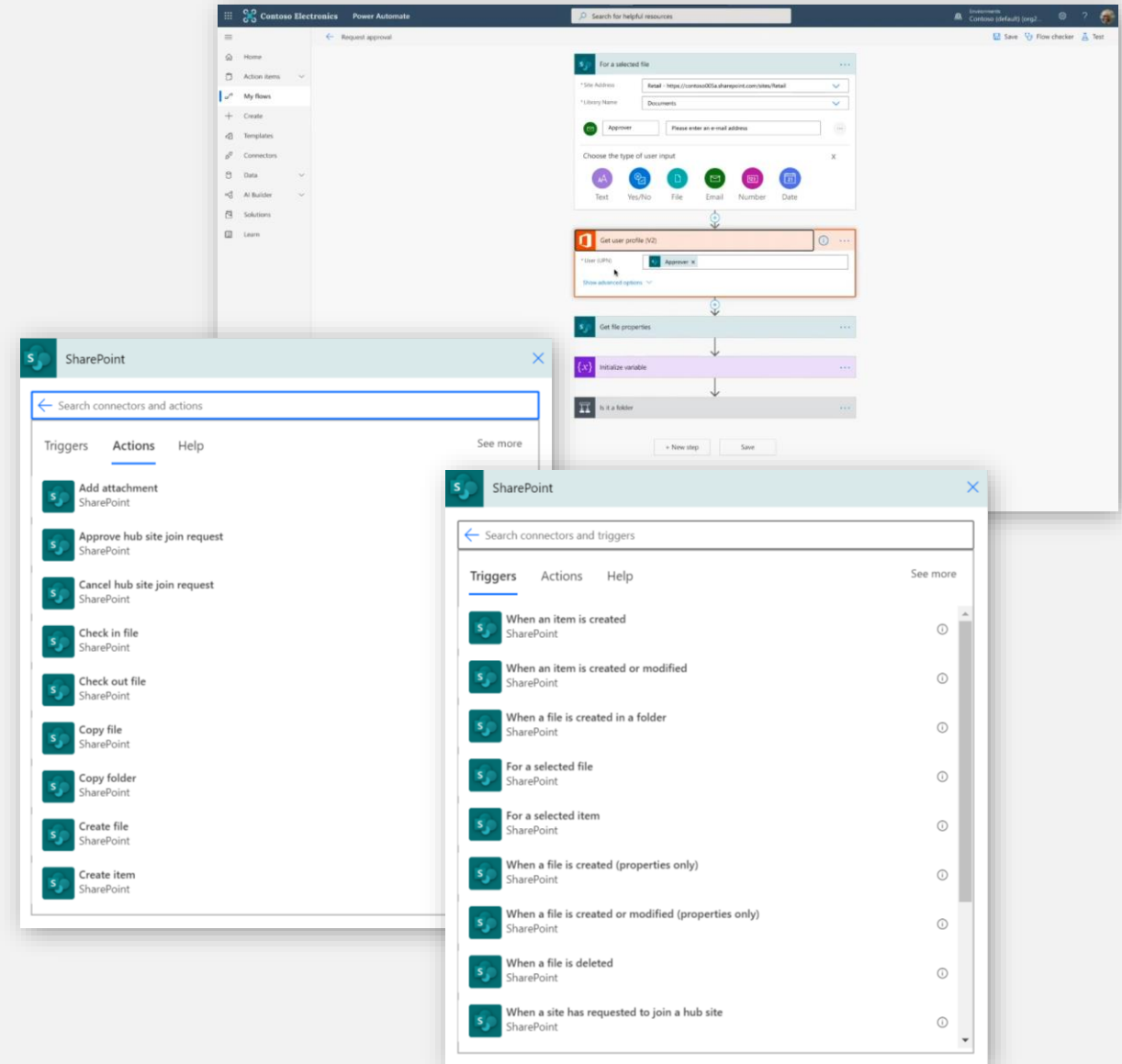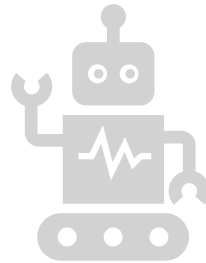
Business process automation
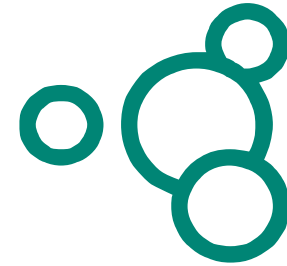
Deep integration via API's

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 and Microsoft Teams user experience

What is SharePoint Framework?

Microsoft Graph

Extension header

Application pages

Web parts

Page visuals
Office UI Fabric

Extension footer

Custom tabs

Personal apps

Task modules

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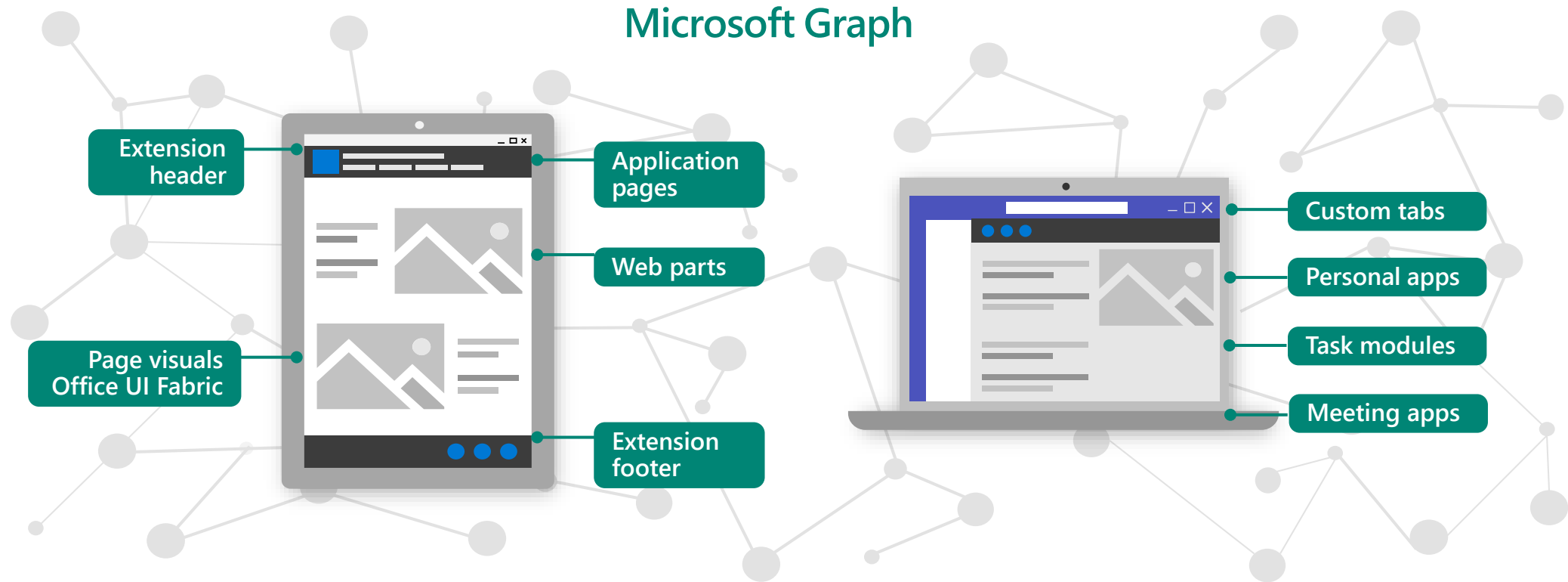
"*An application framework used to build and extend modern experiences in SharePoint and in Microsoft Teams*"

SPFx was publicly announced May 4th, 2016

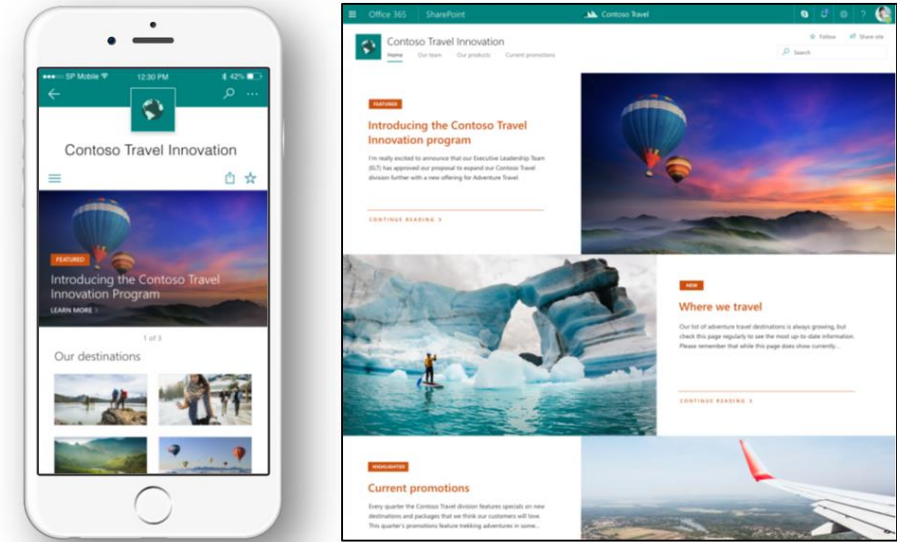# SharePoint Framework (SPFx)

- Modern client-side development
- Lightweight web and mobile
- Powers our own experiences
- Backward compatible
- Supports open-source tools and JavaScript web frameworks

Resources

SharePoint Framework Tutorials

Web parts

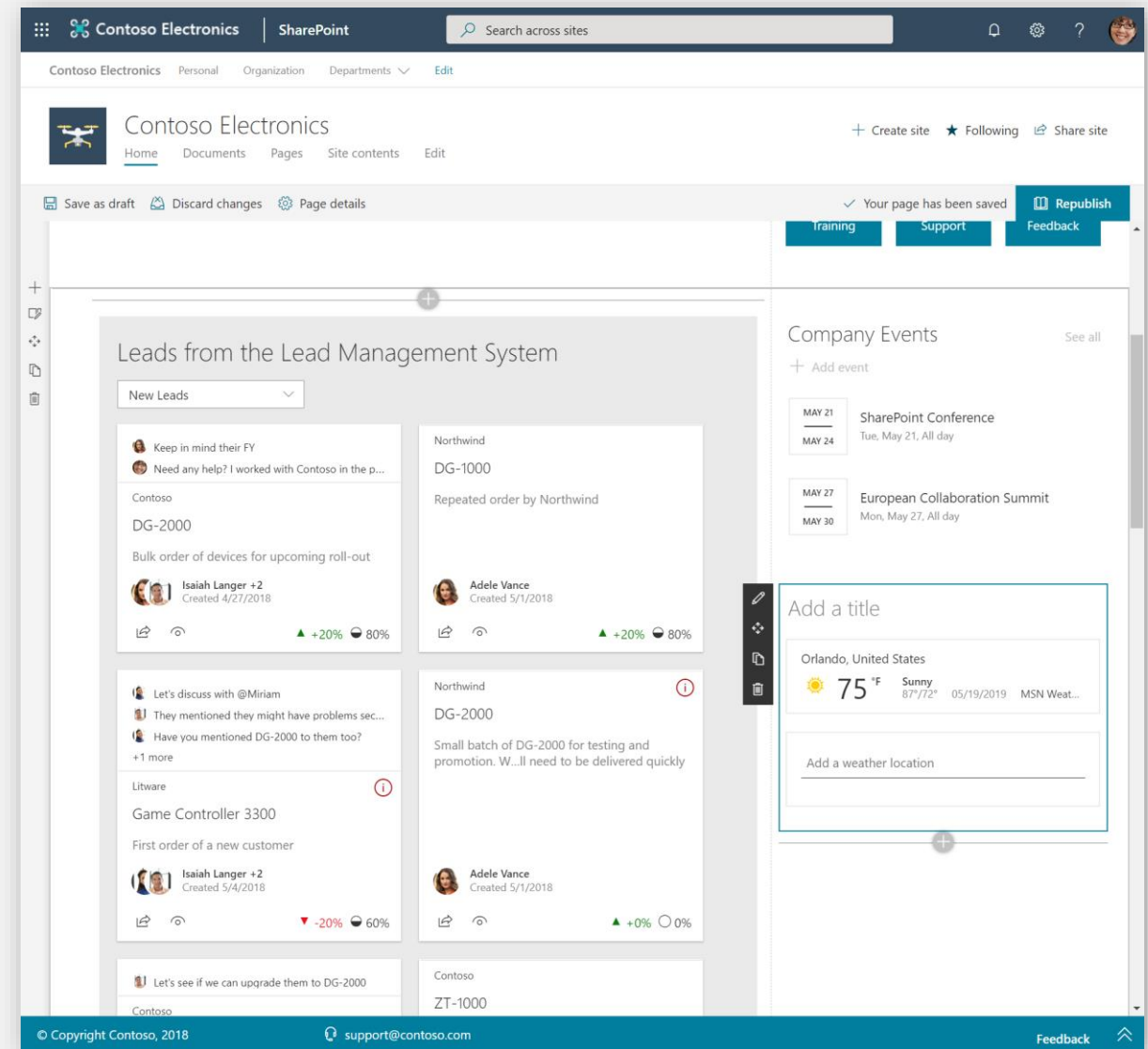Controls that appear inside a SharePoint page and execute client-side in the browser

Resources

SharePoint Framework documentation

Develop web parts with the SharePoint Framework

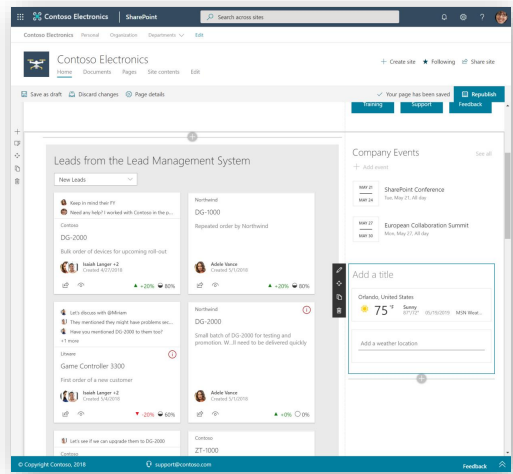SharePoint Framework (SPFx) Web Part Samples

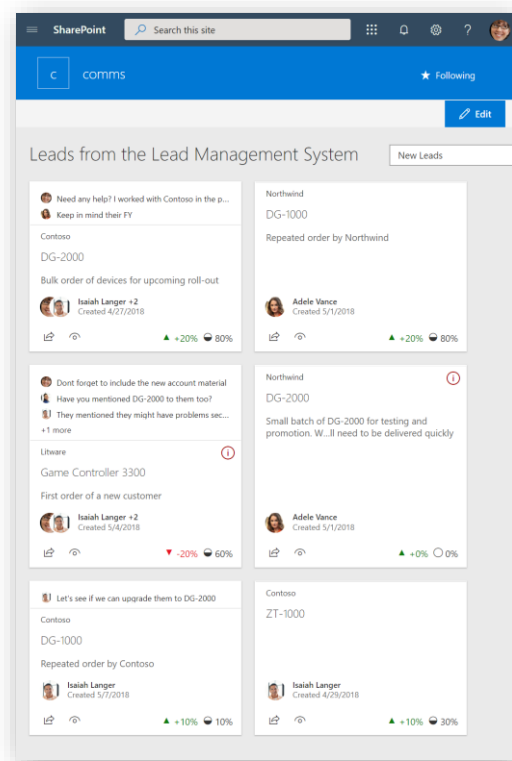Microsoft Teams development samples (includes SPFx web parts)

Use web parts across services

Web parts
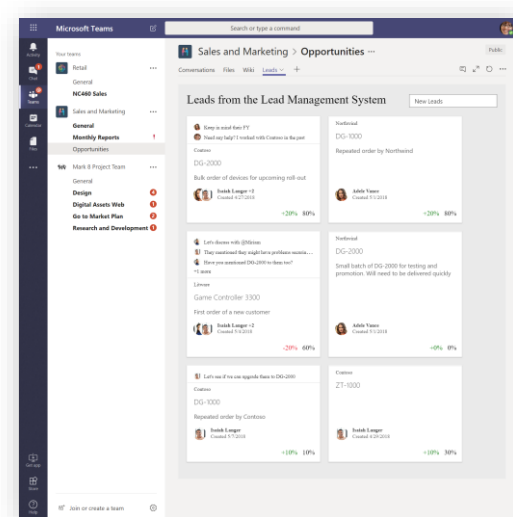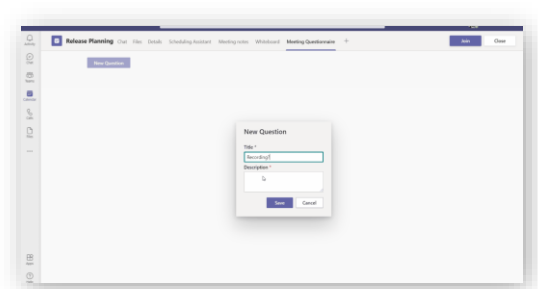
App pages

Teams tabs

Personal Teams apps
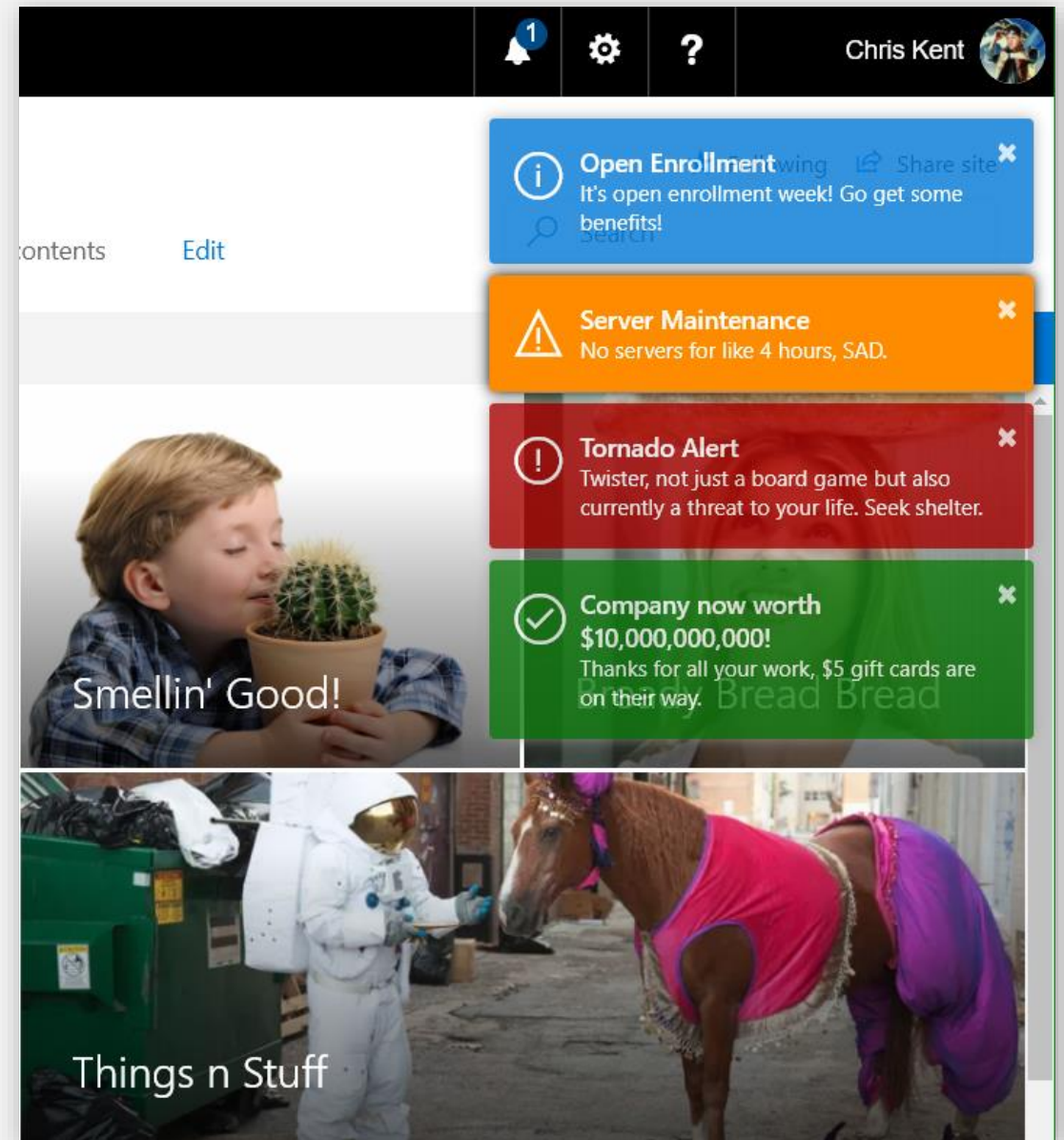
Teams meeting apps

Application customizers

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

Resources

[SharePoint Framework documentation](#)
[Extend the SharePoint user interface with SPFX extensions](#)
[SharePoint Framework (SPFx) Extensions Samples](#)

Field customizers

Provides modified views to data
for fields within a list

Resources

[SharePoint Framework documentation](#)
[Extend the SharePoint user interface with SPFX extensions](#)
[SharePoint Framework (SPFx) Extensions Samples](#)

Percent ∨   +

──○───   30

───○──   74

───○──   70

Command sets

Extends the SharePoint command surfaces to add new actions, and provides client-side code that you can use to implement behaviors

Resources

[SharePoint Framework documentation](#)

[Extend the SharePoint user interface with SPFX extensions](#)

[SharePoint Framework (SPFx) Extensions Samples](#)
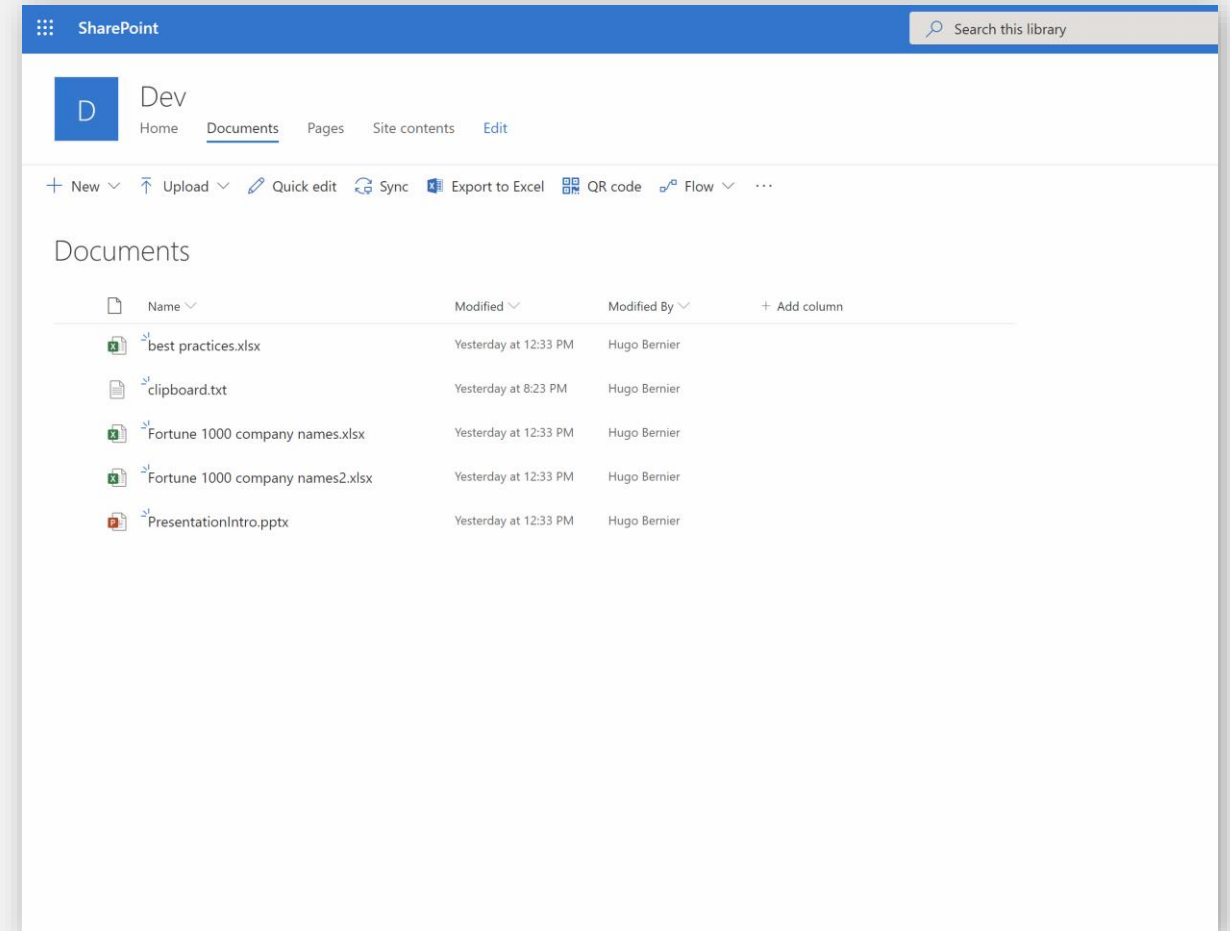
Search Query extension

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

Resources

[SharePoint Framework documentation](#)

[PnP Modern Search](#)

[Getting started with Search Query extensions](#)

Library components

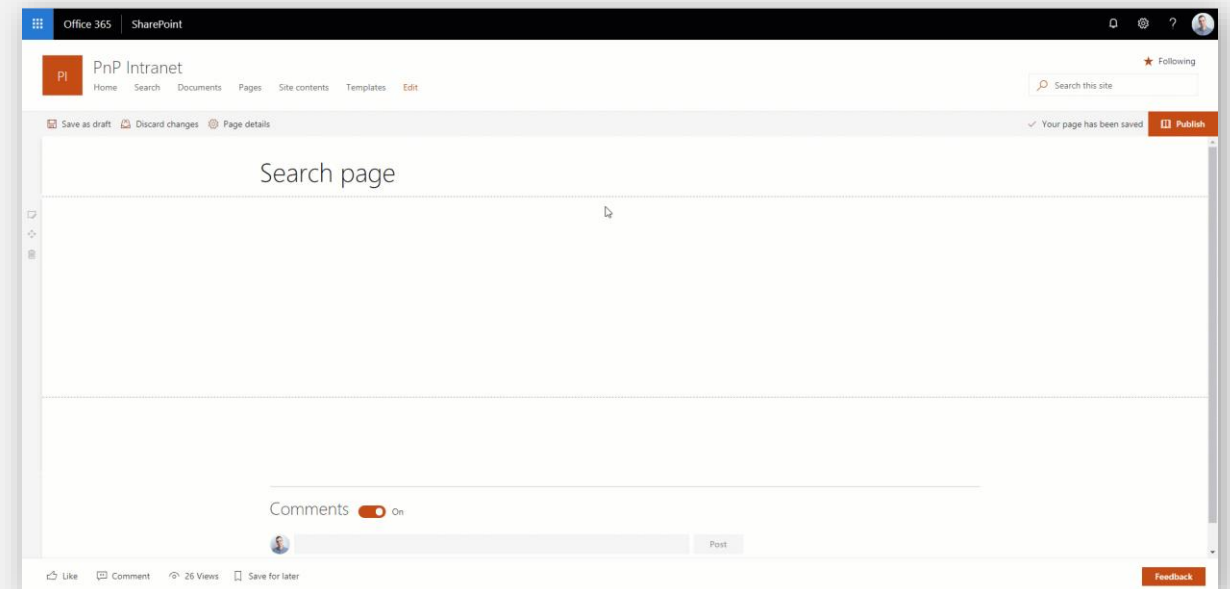The library component type in the SharePoint Framework (SPFx) enables you to have independently versioned and deployed code served automatically for your SharePoint Framework components

Resources

[SharePoint Framework documentation](#)
[SharePoint Framework Library component overview](#)
[SharePoint Framework Library samples](#)

How to create a third-party SPFx library

1. Create a new project directory in your favorite location

   Console   ⧉ Copy

   ```
   md corporate-library
   ```

2. Go to the project directory

   Console   ⧉ Copy

   ```
   cd corporate-library
   ```

3. Create a new library by running the Yeoman SharePoint Generator

   Console   ⧉ Copy

   ```
   yo @microsoft/sharepoint
   ```

4. When prompted, enter the following values (*select the default option for all prompts omitted below*):

   - **Do you want to allow the tenant admin the choice of being able to deploy the solution to all sites immediately without running any feature deployment or adding apps in sites?**: Yes
   - **Which type of client-side component to create?**: Library
   - **What is your Library name?**: CorporateLibrary
   - **What is your Library description?**: CorporateLibrary description

Deployment and configuration

Take control over how users create sites, make your apps available to the SharePoint users
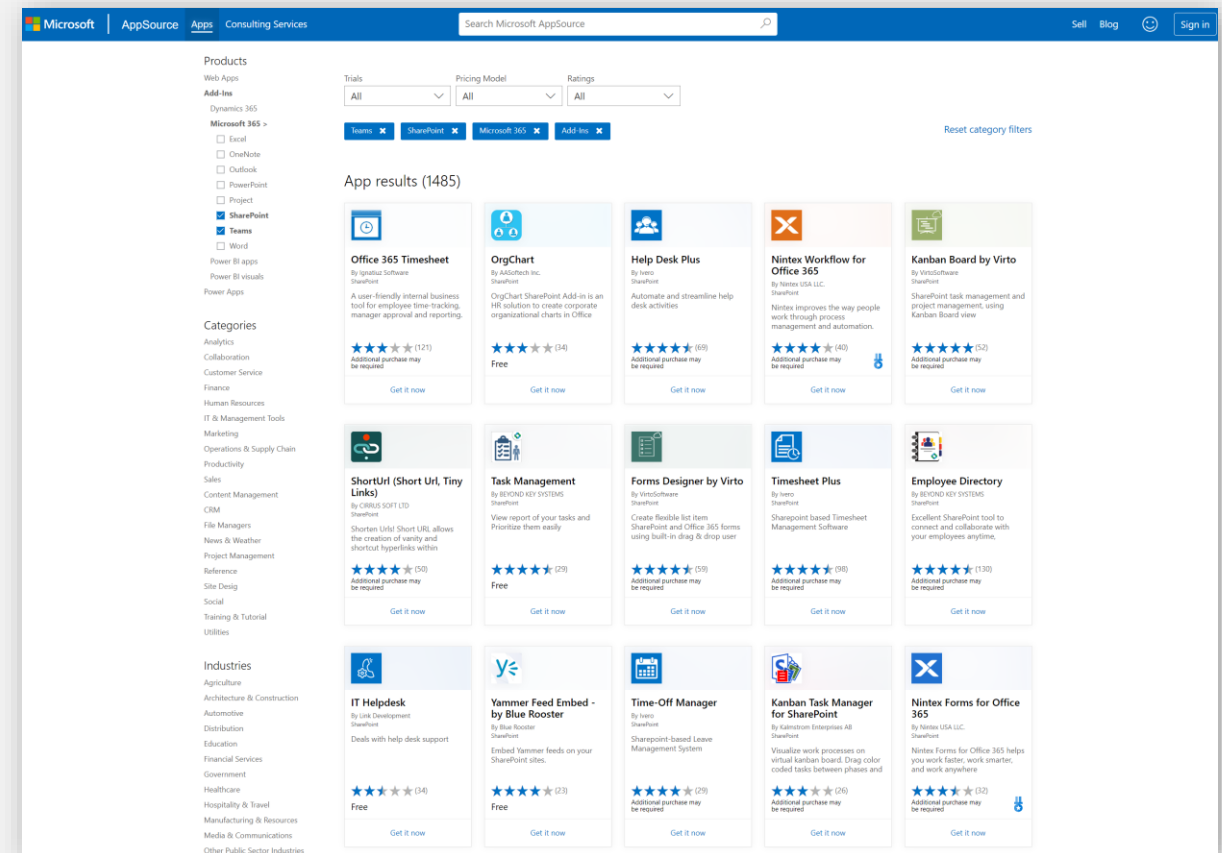
App deployment options
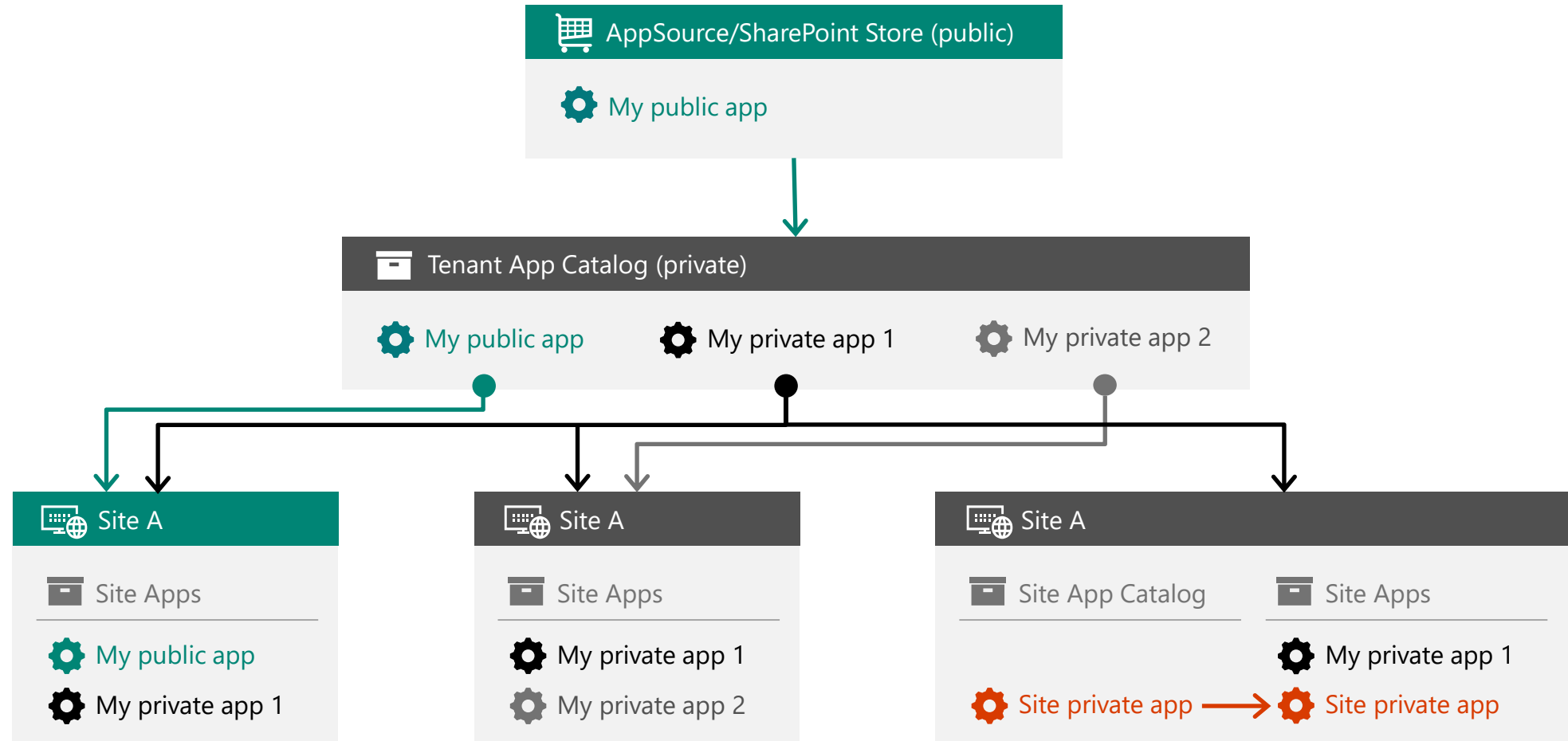
App source

Public store for SharePoint, Teams and Office apps

Resources

[App source documentation](#)
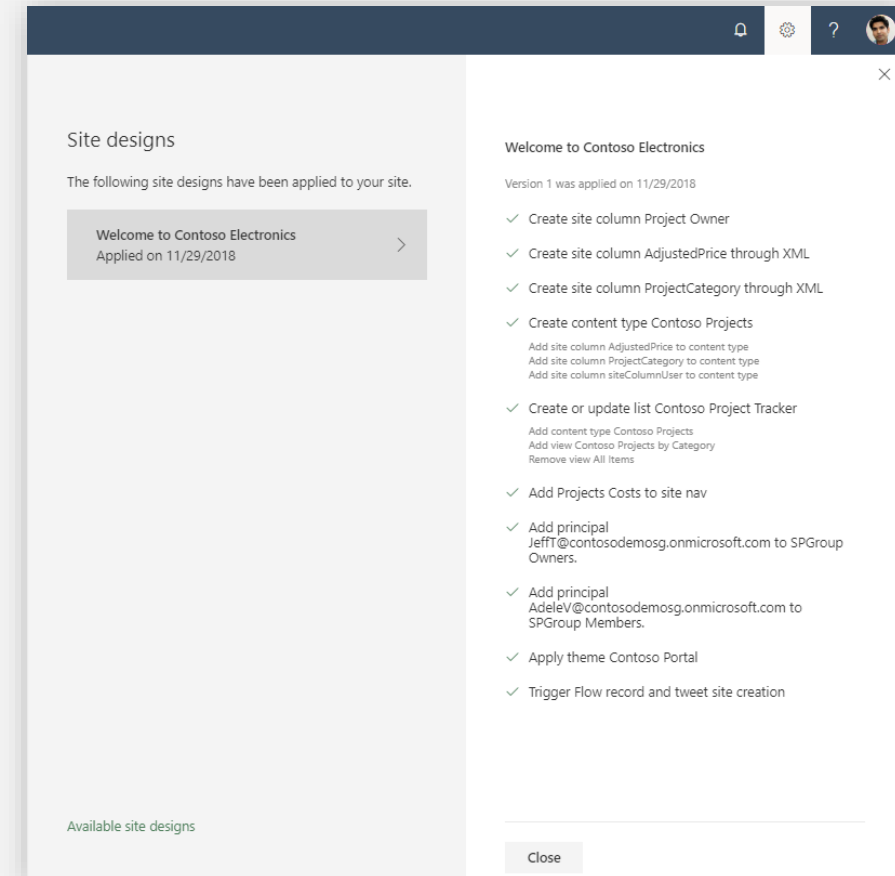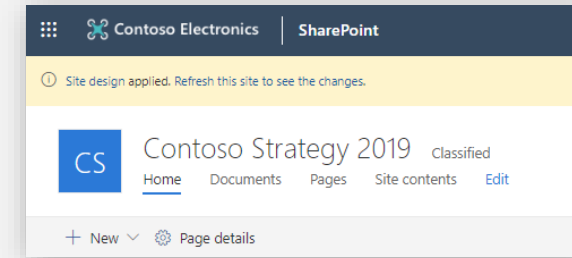[Microsoft App Source](#)

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
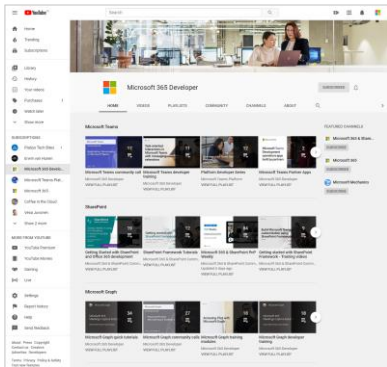
Resources

[Site design and site scripts documentation](#)
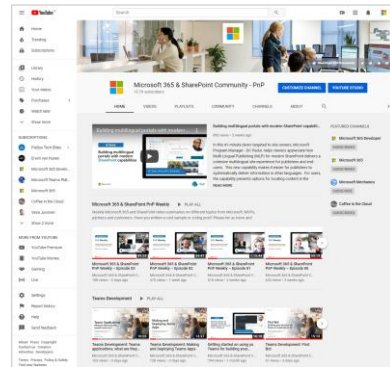
Open source software

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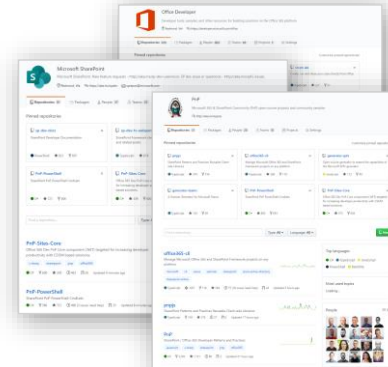
Open-source software

Microsoft 365 developer videos
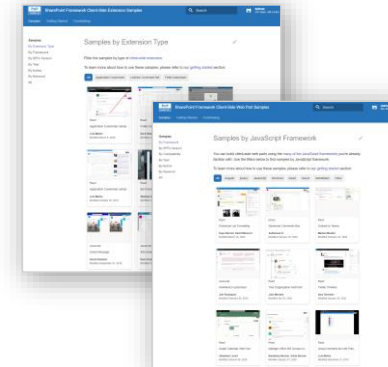
aka.ms/M365DevYouTube

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

@Microsoft365Dev | @m365pnp

Microsoft

Thank you