

Building reusable code libraries for extending Microsoft 365

Julie Turner

Julie Turner

Partner/CTO

Working with SharePoint since 2007

Microsoft MVP, Office Apps and Services since 2017

Microsoft 365 PnP Team since 2019

Open-source project co-maintainer: PnPjs & hTWOo



<https://julieturner.net/me>

SYMPRAXIS
CONSULTING



Why create a code library

- ◆ Reusable code
 - ◆ UX Components
 - ◆ Services
- ◆ Code splitting
 - ◆ Can be done with frameworks and bundlers



Problem Statement

◆ SPFx Libraries

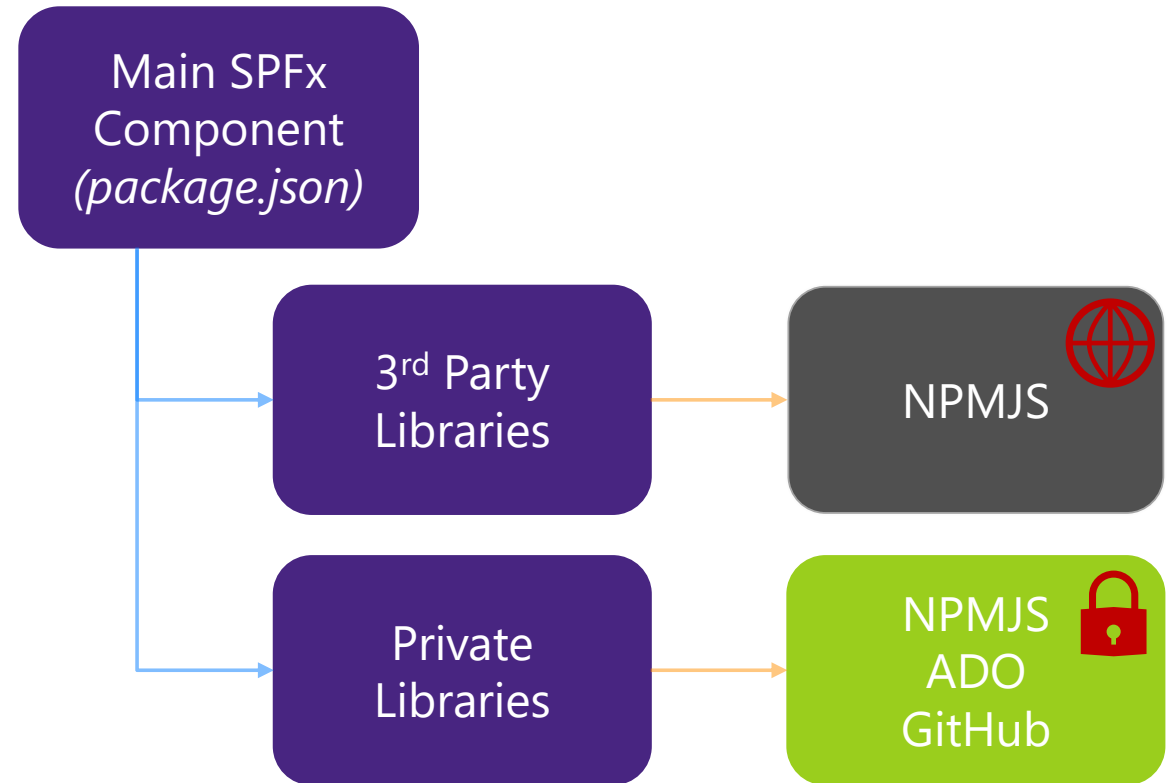
- ◆ Npm link is finicky and can be downright painful (deleting the library folder) – node 8
- ◆ You can only have one version of a library installed in app catalog a time
- ◆ Do not have complete control over the build chain
- ◆ Simple to get started

◆ NPM (style) libraries



- ◆ Provide an industry standard method of consuming libraries
- ◆ Supported by ADO, GitHub Enterprise, and NPM (private libraries)
- ◆ MANY ways to link and test
- ◆ Takes some time to setup
- ◆ Needs a delivery solution


Architecture

- ◆ Main SPFx component includes private and public libraries.
- ◆ Public libraries come from NPMJS
- ◆ Private libraries are built by organization and can be registered in GitHub, Azure DevOps, or NPMJS private subscription





NPMJS

 **npm** is now a part of  GitHub


 Node's Package Magician


ProductsPricingDocumentationCommunity





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0 packages



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 Set status


Julie Turner
juliemturner


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 Newton Center, MA





 julie.turner@sympraxisconsulting.com

 <https://julieturner.net>

Overview Repositories 14 Projects 0 Packages 2 Stars 16 Followers 33 Following 3

Type: All Search packages... Visibility: All Sort by: Most downloads

 **lib1_1** Private 1.0.0
Library 1-1
 juliemturner/Private-Sa...  21  2

 **lib1** Private 1.0.2
Library 1
 juliemturner/Private-Sa...  22  1

Azure DevOps

The image shows a composite of two screenshots from the Azure DevOps web interface. The background screenshot displays the 'Artifacts' section for a project named 'sympraxisconsulting'. The left sidebar contains navigation links for Samples, Overview, Boards, Repos, Pipelines, Test Plans, and Artifacts. The main content area shows a 'DemoFeed' with options to 'Create Feed', 'Connect to feed', and 'Recycle Bin'. Overlaid on this is a foreground screenshot of the 'Connect to feed' dialog. This dialog lists various package managers: NuGet (with sub-options for dotnet, NuGet.exe, and Visual Studio), npm (highlighted), Maven, and Gradle. To the right of the dialog, the 'npm' project setup page is visible. It includes a 'Get the tools' button, a notification for first-time users, and instructions for project setup. The instructions specify adding a .npmrc file with the following content:

```
registry=https://pkgs.dev.azure.com/sympraxisconsulting/Samples/_packaging/DemoFeed/npm/registry/  
always-auth=true
```

 and running the command `vsts-npm-auth -config .npmrc`. A note mentions that a 401 Unauthorized error may occur and provides a link to instructions for using a Personal Access Token.

Background Screenshot: Azure DevOps Artifacts Page

- Header: sympraxisconsulting / Samples / Artifacts / Packages
- Search bar: Search
- Left sidebar: Samples, Overview, Boards, Repos, Pipelines, Test Plans, Artifacts (selected), Project settings
- Main content: DemoFeed, + Create Feed, Connect to feed, Recycle Bin

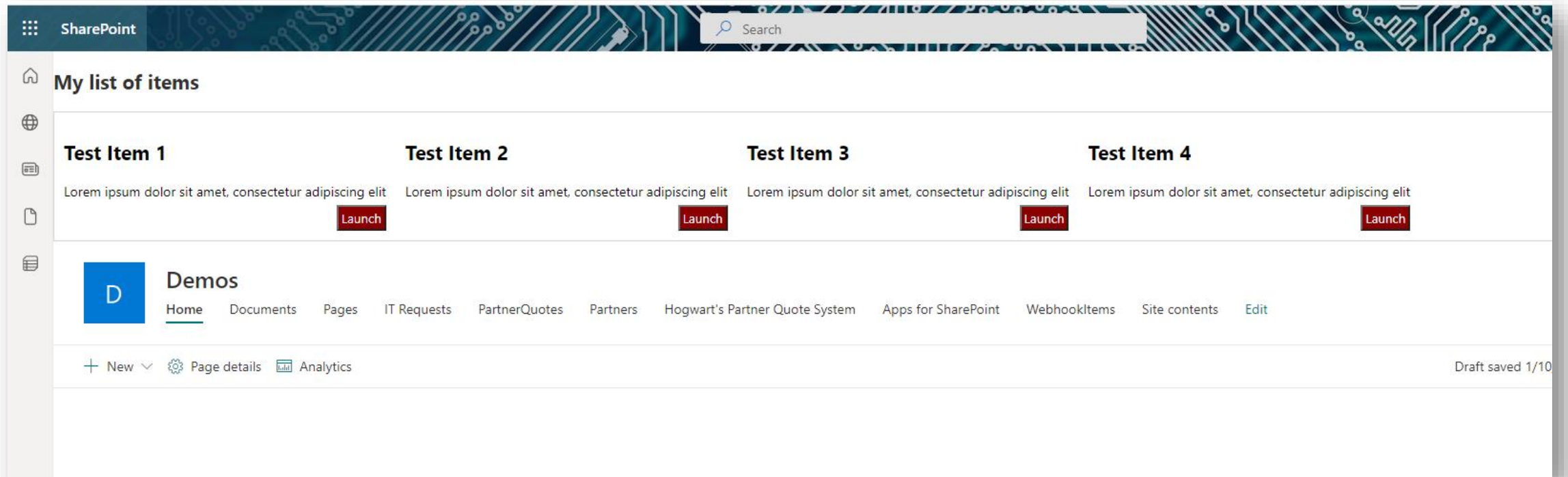
Foreground Screenshot: Connect to feed Dialog

- Header: sympraxisconsulting / Samples / Artifacts / Packages
- Search bar: Search
- Left sidebar: Project settings
- Main content: Connect to feed (DemoFeed)
- Package Manager Selection:
 - NuGet
 - dotnet
 - NuGet.exe
 - Visual Studio
 - npm**
 - Maven
 - Gradle
 - Python

Foreground Screenshot: npm Project Setup Page

- Header: npm, Command line reference, Get the tools
- Notification: First time using Azure Artifacts with npm on this machine? Get the tools
- Section: Project setup
 - Windows | Other
 - Add a .npmrc to your project, in the same directory as your package.json
 - registry=https://pkgs.dev.azure.com/sympraxisconsulting/Samples/_packaging/DemoFeed/npm/registry/
always-auth=true
 - Then, run vsts-npm-auth to get an Azure Artifacts token added to your user-level .npmrc file
 - vsts-npm-auth -config .npmrc
 - Note: You don't need to do this every time. npm will give you a 401 Unauthorized error when you need to run it again. Having issues? See the instructions for using a Personal Access Token to authenticate.
- Section: Restore packages
 - Run this command in your project directory

Let's build... an ugly navigation menu



Setup: Code Structure

All code in one repository

- ◆ Folders in sibling hierarchy

myProject

SPFx Project

Library 1

Library 2

NPM Workspaces
Supported in NPM v7,
native to Node 15+

submodule

submodule

Code in separate repositories

- ◆ Cloned in sibling hierarchy
- ◆ Folders in various locations on local machine

myProject

SPFx Project

myLibrary1

Library 1

myLibrary2

Library 2

Setup: Bundled Reference

◆ package.json – consumer

- ◆ Production: Install library as dev dependency from npm-style registry like any other library
- ◆ Development: Consider relative path install
npm i '../pathtolibrarypackage.json'

◆ webpack.config.cjs – library

- ◆ Add `library` object to output property

Setup: External Reference

◆ package.json – consumer

- ◆ Install library as dev dependency from npm-style registry (or file reference)

◆ webpack.config.cjs – consumer

- ◆ List library in externals

◆ webpack.config.cjs – library

- ◆ Add `library` object to output property

Setup: SPFx Configuration

config.json

```
"externals": {  
  //"@juliemturner/lib1": "https://jmt demos.blob.core.windows.net/npmlib/lib1.js",  
  "@juliemturner/lib1": "https://localhost:3010/lib1.js",  
  //"@juliemturner/lib1_1": "https://jmt demos.blob.core.windows.net/npmlib/lib1_1.js"  
  "@juliemturner/lib1_1": "https://localhost:3000/lib1_1.js"  
},
```

Development/Production

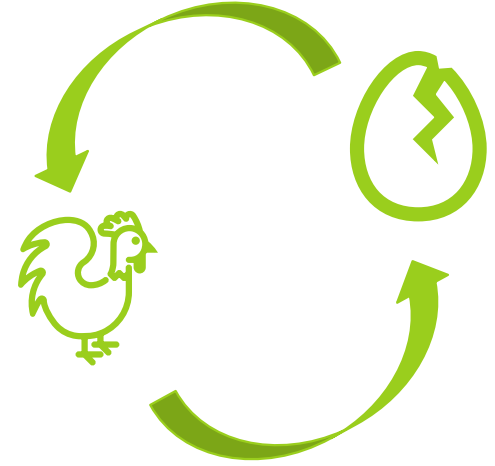
◆ Development of Library

- ◆ To test on its own, use webpack-dev-server
- ◆ To test bootstrapped into SPFx, modify config.json and do a development build

◆ Using Library In Project

- ◆ Install from npm registry like any other library

NPM Publish



- ◆ **Must run ``npm version`` first**
<https://docs.npmjs.com/cli/version>
- ◆ Cannot publish to the same version more than 1x
- ◆ Make sure you have credentials established in `.npmrc` to support the private registry you're publishing to
- ◆ **Run ``npm publish``**
<https://docs.npmjs.com/cli/publish.html>
Consider adding `--dry-run` first to validate
- ◆ **Make sure you've done a production build first**
Consider using `prepublish` script in `package.json` to guarantee code is latest build, beware of failures (Somewhat of a chicken and egg issue)

Security - .npmrc

Basic NPM registry information

```
registry=https://registry.npmjs.org/  
//registry.npmjs.org/:_authToken=<YourNPMJSAuthToken>
```

GitHub registry

```
//npm.pkg.github.com/:_authToken=<YourPersonalAccessToken>  
//npm.pkg.github.com/<YourGitHubAccount>/:_authToken=<YourPersonalAccessToken>  
registry=https://npm.pkg.github.com/<YourGitHubAccount>/  
@<YourGitHubAccount>:registry=https://npm.pkg.github.com
```

ADO registry

```
//pkgs.dev.azure.com/<YourOrg>/_packaging/<YourFeed>/npm/registry/:_authToken=<YourPersonalAccessToken>  
@<YourOrg>:registry=https://pkgs.dev.azure.com/<YourOrg>/_packaging/<YourFeed>/npm/registry/  
//pkgs.dev.azure.com/<YourOrg>/_packaging/<YourFeed>/npm/registry/:username=<YourFeed>  
//pkgs.dev.azure.com/<YourOrg>/_packaging/<YourFeed>/npm/registry/:_password=<YourToken>  
//pkgs.dev.azure.com/<YourOrg>/_packaging/<YourFeed>/npm/registry/:email=<YourEmail>  
//pkgs.dev.azure.com/<YourOrg>/_packaging/<YourFeed>/npm/registry/:always-auth=true
```


Individual Menu Item

Lib1-1

Menu Item Container

Lib1

Bootstrap Menu Into SharePoint

SPFx

Questions



Resources

NPM 5 changes to NPM Link:

<https://chevtek.io/npm-5-changes-to-npm-link/>

NPM Workspaces:

<https://docs.npmjs.com/cli/v7/using-npm/workspaces>

How to create a self-signed cert for testing:

<https://stackoverflow.com/questions/14267010/how-to-create-self-signed-ssl-certificate-for-test-purposes>



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