



International
JavaScript
Conference

Angular Custom Libraries

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About me...

- Owned by [Lukka the Husky](#)
- Live and work in Colorado
- Developer since 1998
- Love tacos...
- Fly Fishing
- Saxophone...Smooth Jazz



What is a Library?

An Angular library is just a collection of things that can be consumed by multiple projects.

Why are they so useful?

**Sharing and
reusing code
- obvious
benefits.**



Angular CLI

A magical tool to create things Angular...

Do you know...?

What does the `@angular/cli`
give us?

```
npm install -g @angular/cli
```

```
user@buildmotion-pro ~ % ng --version
```



Angular CLI: 11.2.14

Node: 16.9.1

OS: darwin x64

Angular:

...

Ivy Workspace:

Package	Version

@angular-devkit/architect	0.1102.14 (cli-only)
@angular-devkit/core	11.2.14 (cli-only)
@angular-devkit/schematics	11.2.14 (cli-only)
@schematics/angular	11.2.14 (cli-only)
@schematics/update	0.1102.14 (cli-only)

```
user@buildmotion-pro ~ % ng new some-name-here
```

Do you know...?

**What does the `ng new` CLI
command give us?**

```
ng new some-name-here
```


Angular Version 6 gives us a *Workspace*?

May the 4th (2018) be with you.



{
} angular.json > ...

Matt Vaughn, 3 hours ago | 2 authors (Matt Vaughn and others)

```
1  {  
2    "matt, 2 weeks ago • add ng ws default"  
3    "$schema": "./node_modules/@angular/cli/lib/config/schema.json",  
4    "version": 1,  
5    "newProjectRoot": "projects",  
6    "projects": {  
7      "errorHandler": {  
8        "projectType": "library",  
9        "root": "projects/error-handler",  
10       "sourceRoot": "projects/error-handler/src",  
11       "prefix": "lib",  
12       "architect": { ...  
13     },  
14     },  
15     "portal": {  
16       "projectType": "application",  
17       "schematics": { ...  
18     },  
19     "root": "projects/portal",  
20     "sourceRoot": "projects/portal/src",  
21     "prefix": "app",  
22     "architect": { ...  
23   },  
24   "defaultProject": "errorHandler"  
25 }
```

What do we get with an Angular Workspace?

- Multiple projects within the same development environment.
 - Monorepo
- New project type: `library`
- Updated folder structure (code organization)

```
user@buildmotion-pro ~ % ng new some-name-here -d
```

```
? Do you want to enforce stricter type checking and stricter bundle budgets in the workspace?  
This setting helps improve maintainability and catch bugs ahead of time.
```

```
[ For more information, see https://angular.io/strict Yes
```

```
[? Would you like to add Angular routing? Yes
```

```
? Which stylesheet format would you like to use? SCSS [ https://sass-lang.com/documentation/syntax
```

```
]
CREATE some-name-here/README.md (1022 bytes)
CREATE some-name-here/.editorconfig (274 bytes)
CREATE some-name-here/.gitignore (631 bytes)
CREATE some-name-here/angular.json (3769 bytes)
CREATE some-name-here/package.json (1215 bytes)
CREATE some-name-here/tsconfig.json (783 bytes)
CREATE some-name-here/tslint.json (3185 bytes)
CREATE some-name-here/.browserslistrc (703 bytes)
CREATE some-name-here/karma.conf.js (1431 bytes)
CREATE some-name-here/tsconfig.app.json (287 bytes)
CREATE some-name-here/tsconfig.spec.json (333 bytes)
CREATE some-name-here/src/favicon.ico (948 bytes)
CREATE some-name-here/src/index.html (298 bytes)
CREATE some-name-here/src/main.ts (372 bytes)
CREATE some-name-here/src/polyfills.ts (2830 bytes)
CREATE some-name-here/src/styles.scss (80 bytes)
CREATE some-name-here/src/test.ts (753 bytes)
CREATE some-name-here/src/assets/.gitkeep (0 bytes)
CREATE some-name-here/src/environments/environment.prod.ts (51 bytes)
CREATE some-name-here/src/environments/environment.ts (662 bytes)
CREATE some-name-here/src/app/app-routing.module.ts (245 bytes)
CREATE some-name-here/src/app/app.module.ts (393 bytes)
CREATE some-name-here/src/app/app.component.scss (0 bytes)
CREATE some-name-here/src/app/app.component.html (24955 bytes)
CREATE some-name-here/src/app/app.component.spec.ts (1081 bytes)
CREATE some-name-here/src/app/app.component.ts (219 bytes)
CREATE some-name-here/e2e/protractor.conf.js (904 bytes)
CREATE some-name-here/e2e/tsconfig.json (274 bytes)
CREATE some-name-here/e2e/src/app.e2e-spec.ts (665 bytes)
CREATE some-name-here/e2e/src/app.po.ts (274 bytes)
```

angular.json

src

NOTE: The "dryRun" flag means no changes were made.

A Workspace with no projects.

```
[user@buildmotion-pro ~ % ng new some-name-here --create-application=false -d
? Do you want to enforce stricter type checking and stricter bundle budgets in the workspace?
  This setting helps improve maintainability and catch bugs ahead of time.
[   For more information, see https://angular.io/strict Yes
CREATE some-name-here/README.md (1022 bytes)
CREATE some-name-here/.editorconfig (274 bytes)
CREATE some-name-here/.gitignore (631 bytes)
CREATE some-name-here/angular.json (139 bytes)
CREATE some-name-here/package.json (1143 bytes)
CREATE some-name-here/tsconfig.json (783 bytes)
CREATE some-name-here/tslint.json (2992 bytes)

NOTE: The "dryRun" flag means no changes were made.
```

angular.json

--dry-run

Angular CLI

How to create new library projects....

Do you know...?

**What does the `ng g library`
CLI command give us?**

```
ng generate library some-library-name --dry-run
```


New library project output:

```
[user@buildmotion-pro angular-workspace % ng generate library some-library-name --dry-run
CREATE projects/some-library-name/README.md (1066 bytes)
CREATE projects/some-library-name/karma.conf.js (1438 bytes)
CREATE projects/some-library-name/ng-package.json (166 bytes)
CREATE projects/some-library-name/package.json (198 bytes)
CREATE projects/some-library-name/tsconfig.lib.json (540 bytes)
CREATE projects/some-library-name/tsconfig.lib.prod.json (230 bytes)
CREATE projects/some-library-name/tsconfig.spec.json (309 bytes)
CREATE projects/some-library-name/tslint.json (247 bytes)
CREATE projects/some-library-name/src/public-api.ts (199 bytes)
CREATE projects/some-library-name/src/test.ts (781 bytes)
CREATE projects/some-library-name/src/lib/some-library-name.module.ts (289 bytes)
CREATE projects/some-library-name/src/lib/some-library-name.component.spec.ts (691 bytes)
CREATE projects/some-library-name/src/lib/some-library-name.component.ts (296 bytes)
CREATE projects/some-library-name/src/lib/some-library-name.service.spec.ts (404 bytes)
CREATE projects/some-library-name/src/lib/some-library-name.service.ts (144 bytes)
UPDATE angular.json (6617 bytes)
UPDATE tsconfig.json (1034 bytes)
```

CLI

projects folder

updates files

NOTE: The "dryRun" flag means no changes were made.

tsconfig.J SON

TS tsconfig.json > {} compilerOptions

You, 2 minutes ago | 2 authors (matt and others)

/ To learn more about this file see: <https://angular.>*

{

"compileOnSave": false,

"compilerOptions": {

"baseUrl": "./",

"outDir": "./dist/out-tsc",

"forceConsistentCasingInFileNames": true,

"paths": {

"error-handler": [

"dist/error-handler/error-handler",

"dist/error-handler"

],

"some-library-name": [

"dist/some-library-name/some-library-name",

"dist/some-library-name"

]

},

Imports mapper

to

from

locations

Building Libraries

Make some use out of the `dist` folder.

How to build a library...?

What does the `ng build`
`errorHandler` **CLI command give**
us?

```
user@buildmotion-pro angular-workspace % ng build errorHandler
```

```
Building Angular Package
```

```
*****
```

```
It is not recommended to publish Ivy libraries to NPM repositories.
```

```
Read more here: https://v9.angular.io/guide/ivy#maintaining-library-compatibility
```

```
*****
```

CLI command

```
-----  
Building entry point 'error-handler'  
-----
```

Angular compiler

```
✓ Compiling TypeScript sources through NGC
```

```
✗ Bundling to FESM2015(node:51338) [DEP0148] DeprecationWarning: Use of deprecated folder mapping "./" in  
module resolution of the package at /Users/user/work/github/ijs-custom-angular-libraries/angular-workspace/  
package.json.
```

```
Update this package.json to use a subpath pattern like "./*".
```

```
(Use `node --trace-deprecation ...` to show where the warning was created)
```

```
✓ Bundling to FESM2015
```

```
✓ Bundling to UMD
```

```
✓ Minifying UMD bundle
```

```
✓ Writing package metadata
```

```
i Built error-handler
```

Angular Package Format

Package Output

```
-----  
Built Angular Package
```

```
- from: /Users/user/work/github/ijs-custom-angular-libraries/angular-workspace/projects/error-handler  
- to:   /Users/user/work/github/ijs-custom-angular-libraries/angular-workspace/dist/error-handler  
-----
```

Do you know...?

Where does the `ng build`
`errorHandler` **CLI command put**
our package?

Package
output in
the [dist]
folder.

```
error-handler
├── bundles
│   ├── error-handler.umd.js
│   ├── error-handler.umd.js.map
│   ├── error-handler.umd.min.js
│   └── error-handler.umd.min.js.map
├── esm2015
│   ├── lib
│   │   ├── error-handler.component.js
│   │   ├── error-handler.module.js
│   │   └── error-handler.service.js
│   ├── error-handler.js
│   └── public-api.js
├── fesm2015
│   ├── error-handler.js
│   └── error-handler.js.map
├── lib
│   ├── error-handler.component.d.ts
│   ├── error-handler.component.d.ts.map
│   ├── error-handler.module.d.ts
│   ├── error-handler.module.d.ts.map
│   ├── error-handler.service.d.ts
│   └── error-handler.service.d.ts.map
├── error-handler.d.ts
├── error-handler.d.ts.map
├── package.json
├── public-api.d.ts
├── public-api.d.ts.map
└── README.md
```

CLI command recap...?

The CLI simplifies our workflow, right?

```
ng new angular-workspace --create-application=false  
ng generate library error-handler  
ng build errorHandler
```

Use the Library

How to use a new library project....

ErrorHandlerService in the Library

You, seconds ago | 3 authors (Matt Vaughn and others)

```
1 import { ErrorHandler, Injectable } from '@angular/core';
```

You, seconds ago | 3 authors (Matt Vaughn and others)

```
3 @Injectable({
```

```
4   providedIn: 'root'
```

```
5 })
```

```
6 export class ErrorHandlerService implements ErrorHandler {
```

```
8   constructor(Matt Vaughn, 6 days ago • identify candidates
```

```
9     // FIXME: consider injecting a logging service here; AN OPP FOR ANOTHER LIBRARY PROJECT! :)
```

```
10  ) { }
```

```
12   handleError(error: any): void {
```

```
13     console.●error(`ErrorHandlerService: ${error}`); // really? you'll want to do much more than this, right?
```

```
14     // FIXME: USE A LOGGING SERVICE TO SEND THE INFORMATION HOME...KNOW AND UNDERSTAND THE HEALTH OF THE APP
```

```
15   }
```

```
16 }
```

Do you know...?

How do we use the library in our application?

Import the service using the library name (tsconfig|paths)

projects > portal > src > app > TS app.module.ts > ...

```
1 import { ErrorHandler, NgModule } from '@angular/core';
2 import { BrowserModule } from '@angular/platform-browser';
3
4 import { AppRoutingModule } from './app-routing.module';
5 import { AppComponent } from './app.component';
6
7 import { ErrorHandlerService } from 'error-handler' Matt Vaughn
8
```

Matt Vaughn, 7 hours ago | 1 author (Matt Vaughn)

```
9 @NgModule({
10   declarations: [
11     AppComponent
12   ],
13   imports: [
14     BrowserModule,
15     AppRoutingModule
16   ],
17   providers: [
18     {
19       provide: ErrorHandler,
20       useClass: ErrorHandlerService
21     }
22   ],
23   bootstrap: [AppComponent]
24 })
25 export class AppModule { }
26
```

Tips & Tricks

Make library project....