Connect Micro frontends with the Single-Spa framework. Step by step guide.

Oleh Baranovskyi · Follow

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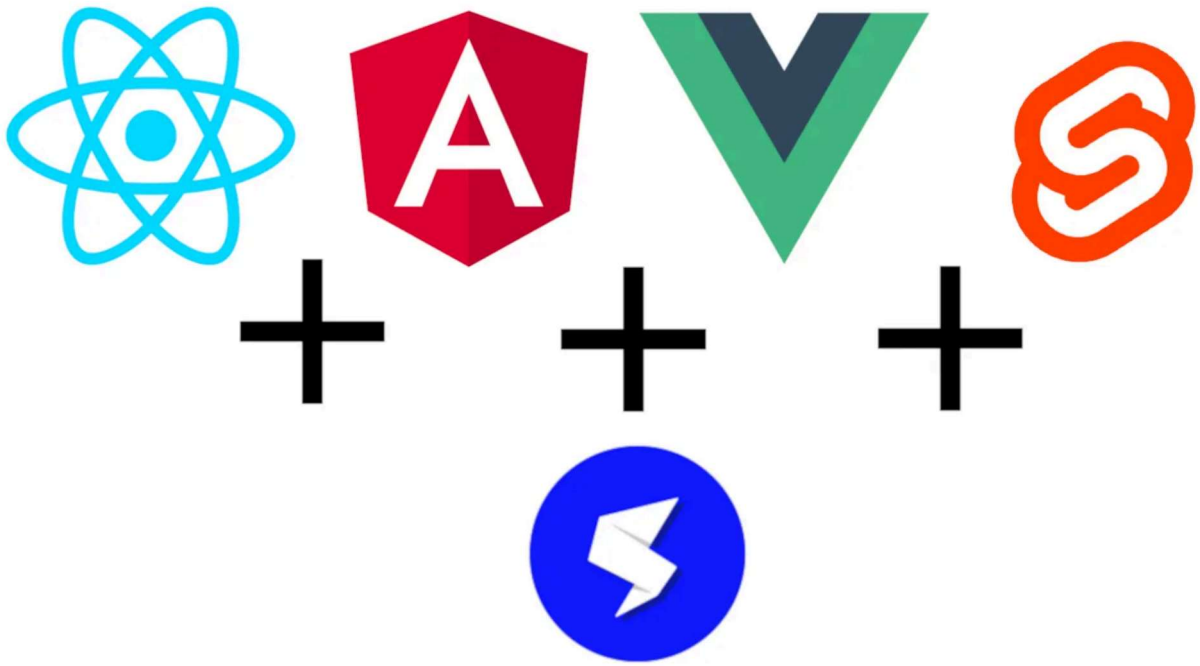
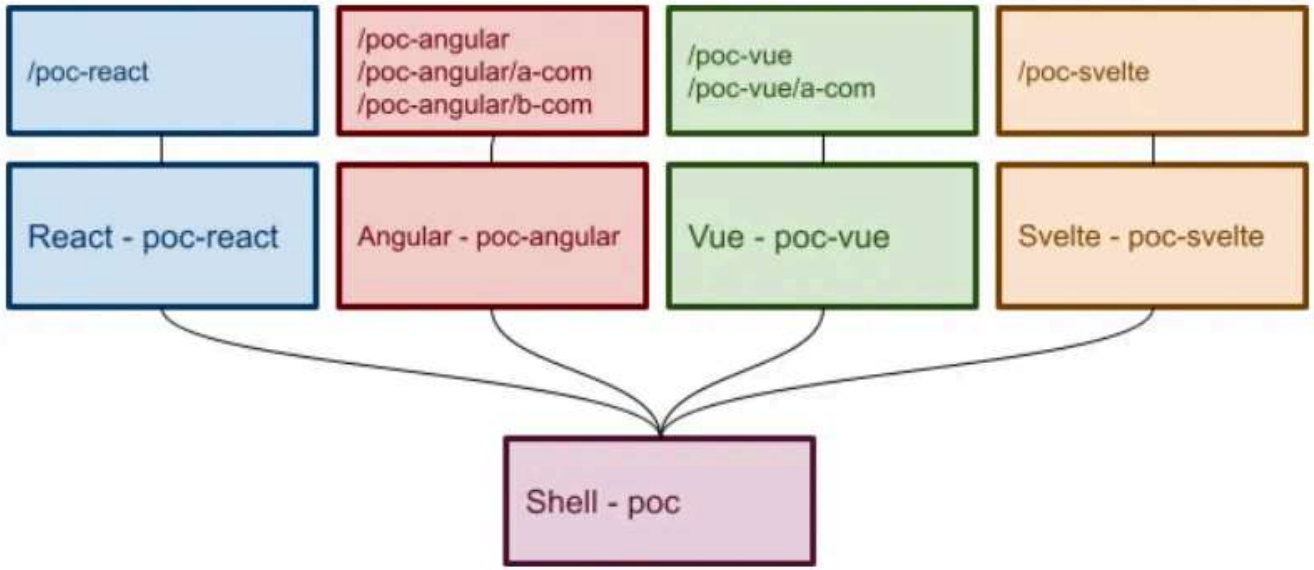


In this article, we are going to set up the shell/layout project which will be using the Single-Spa as a glue to connect multiple frameworks, such as React, Angular, Vue, and Svelte. We will try to keep it simple as much as it's possible, to focus rather on the composition part than on the styling.

Our projects architecture is going to have the following structure:



Let's dig right into implementation.

Setup Shell (layout) app

First, we need to create a shell app that will be the glue for the rest. This app will be responsible for connecting all the frameworks that we will use in the current article.

1. Create a folder for the shell app:

```
mkdir poc && cd poc
```

2. Setup project:

```
create-single-spa --layout
```

and choose:

- Directory for new project — `.`
- Select type to generate — `single-spa root config`
- Which package manager do you want to use? — `npm`
- Will this project use TyeScript — `y`
- Organization name — `obaranovskyi`

3. Install dependencies:

```
npm install
```

4. Open ***src/microfrontend-layout.html***, and remove the following line:

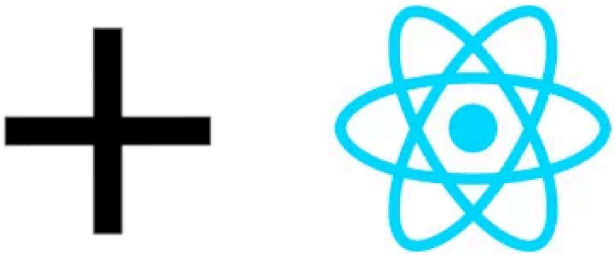
```
<application name="@single-spa/welcome"></application>
```

5. Open *src/index.ejs*, and remove this line:

```
"@single-spa/welcome": "https://unpkg.com/single-spa-
welcome/dist/single-spa-welcome.js",
```

6. Start the project, which will run on *http://localhost:9000*:

```
npm start
```



1. Create a folder for the React application:

```
mkdir poc-react && cd poc-react
```

2. Setup React project with the Single-Spa CLI:

```
create-single-spa --framework react
```

and choose:

- Directory for new project — `.`
- Which package manager do you want to use? — `npm`
- Will this project use TypeScript — `y`
- Organization name — `obaranovskyi`
- Project name — `poc-react`

3. Install dependencies:

```
npm install
```

4. Start the project:

```
npm start -- --port 8500
```

The Shell project updates:

5. Update *src/index.ejs* file import map:

```
...
<script type="systemjs-importmap">
    {
      "imports": {
        "react":
"https://cdn.jsdelivr.net/npm/react@16.13.1/umd/react.production.min.
js",
        "react-dom": "https://cdn.jsdelivr.net/npm/react-
dom@16.13.1/umd/react-dom.production.min.js",
        "@obaranovskyi/root-config": "//localhost:9000/obaranovskyi-
root-config.js",
        "@obaranovskyi/poc-react": "//localhost:8500/obaranovskyi-
poc-react.js"
      }
    }
</script>
...
```

6. Update *src/obaranovskyi-root-config.ts:*

```
...
registerApplication(
  "@obaranovskyi/poc-react",
  () => System.import("@obaranovskyi/poc-react"),
  (location) => location.pathname === "/poc-react"
);

...
```

7. Update *src/microfrontend-layout.html*:

```
...

<main>
    <route default>
      <ul>
          <li>
            <a href="/">Home</a>
          </li>
          <li>
            <a href="./poc-react">React</a>
          </li>
      </ul>
    </route>
</main>

...
```

Here we will also add child routes to prove that everything works as expected, including the lazy loading module.

1. Create an Angular app using angular CLI:

```
ng new poc-angular
```

and choose:

- Do you want to enforce stricter type checking and stricter bundle budgets in the workspace? — `yes`
- Would you like to add angular routing? — `y`
- Which stylesheet format would you like to use? — `scss`

2. Install dependencies:

```
cd poc-angular && npm install
```

3. Add Single-Spa to the project with all configurations:

```
ng add single-spa-angular
```

and choose:

- Does your application use angular routing? — `y`
- Does your application use the BrowserAnimationModule — `y`

4. Generate component B:

```
ng generate component b-com
```


5. Generate component A with the module:

```
ng generate component a-com
ng generate module a-com
```

6. Add *src/app/a-com/a-com-routing.module.ts*:

```
import { Routes, RouterModule } from '@angular/router';
import { AComComponent } from './a-com.component';
const routes: Routes = [
  {
    path: '',
    component: AComComponent
  },
];
export const AComRoutingModule = RouterModule.forChild(routes);
```

7. Update *src/app/a-com/a-com.module.ts*:

```
import { NgModule } from '@angular/core';

import { AComRoutingModule } from './a-com-routing.module';
import { AComComponent } from './a-com.component';

@NgModule({
  imports: [AComRoutingModule],
  declarations: [AComComponent],
})
export class AComModule {}
```

8. Update *src/app/app-routing.module.ts*:

```
import { RouterModule, Routes } from '@angular/router';

import { BComComponent } from './b-com/b-com.component';

const routes: Routes = [
  {
    path: 'b-com',
    component: BComComponent,
  },
  {
    path: 'a-com',
    loadChildren: () =>
      import('./a-com/a-com.module').then((m) => m.AComModule),
  },
];
```

```
export const AppRoutingModule = RouterModule.forRoot(routes, {
  relativeLinkResolution: 'legacy',
});
```

9. Update *src/app/app.module.html*:

```
Angular works!

<ul>
    <li>
        <a href="" routerLink="./a-com">A component</a>
    </li>
    <li>
        <a href="" routerLink="./b-com">B component</a>
    </li>
</ul>

<router-outlet></router-outlet>
```

10. Update *src/app/app.module.ts*:

```
import { APP_BASE_HREF } from '@angular/common';
import { NgModule } from '@angular/core';
import { BrowserAnimationsModule } from '@angular/platform-
browser/animations';

import { AppRoutingModule } from './app-routing.module';
import { AppComponent } from './app.component';
```

```
@NgModule({
  declarations: [AppComponent],
  imports: [BrowserAnimationsModule, AppRoutingModule],
  providers: [{ provide: APP_BASE_HREF, useValue: '/poc-angular' }],
  bootstrap: [AppComponent],
})
export class AppModule {}
```

11. Remove *src/app/empty-route* folder;

12. Install `systemjs-webpack-interop` module:

```
npm install systemjs-webpack-interop -S
```

13. Add *src/set-public-path.js*:

```
import { setPublicPath } from "systemjs-webpack-interop";

setPublicPath("@obaranovskyi/poc-angular");
```

14. In *src/main.single-spa.ts* add the line bellow as the first line:

```
import './set-public-path';
```

15. Install dependencies (again):

```
npm install
```

16. Start the project:

```
npm run serve:single-spa:poc-angular
```

The Shell project updates:

16. Add *zone.js* script to the ***src/index.ejs***:

```
...
<script src="https://unpkg.com/zone.js"></script>
...
```

17. Update import map in the ***src/index.ejs***:

```
...
<script type="systemjs-importmap">
    {
      "imports": {
        "react":
"https://cdn.jsdelivr.net/npm/react@16.13.1/umd/react.production.min.
js",
        "react-dom": "https://cdn.jsdelivr.net/npm/react-
dom@16.13.1/umd/react-dom.production.min.js",
        "@obaranovskyi/root-config": "//localhost:9000/obaranovskyi-
root-config.js",
        "@obaranovskyi/poc-react": "//localhost:8500/obaranovskyi-
poc-react.js",
        "@obaranovskyi/poc-angular": "//localhost:4200/main.js"
      }
    }
  </script>
...
```

18. Register the app in the *src/obaranovskyi-root-config.ts*:

```
...
registerApplication(
  "@obaranovskyi/poc-angular",
  () => System.import("@obaranovskyi/poc-angular"),
  (location) => {
    return location.pathname.startsWith("/poc-angular");
  }
);
...
```

19. Update menu in the *src/microfrontend-layout.html*:

```
...
<main>
    <route default>
      <ul>
          <li>
            <a href="/">Home</a>
          </li>
          <li>
            <a href="/poc-react">React</a>
          </li>
          <li>
            <a href="/poc-angular">Angular</a>
          </li>
      </ul>
    </route>
  </main>
...
```

1. Create a folder for the project:

```
mkdir poc-vue && cd poc-vue
```

2. Setup using Single-Spa CLI:

```
create-single-spa --framework vue
```

and choose:

- Directory for new project — .
- Organization name — `obaranovskyi`
- Target directory .. already exists. Pick an action — `Overwrite`
- Please pick a preset — `Default ([Vue 3] babel, eslint)`

3. Rename ***src/components/HelloWorld.vue*** to ***src/components/ACom.vue***:

4. Update **src/components/ACom.vue**:

```
<template>
  <div>
      A component works!
  </div>
</template>

<script>
export default {
  name: 'ACom'
}
</script>

<style scoped>
</style>
```

5. Add *src/router/index.js*:

```
import { createRouter, createWebHistory } from "vue-router";
import ACom from "../components/ACom.vue";

const routes = [
  {
    path: "/poc-vue/a-com",
    name: "ACom",
    component: ACom
  }
];

const router = createRouter({
  history: createWebHistory(process.env.BASE_URL),
  routes
});

export default router;
```

6. Update **src/main.js**:

```
import "./set-public-path";
import { h, createApp } from "vue";
import singleSpaVue from "single-spa-vue";

import App from "./App.vue";
import router from "./router";

const vueLifecycles = singleSpaVue({
  createApp,
  appOptions: {
```

```
    render() {
      return h(App, {
        name: this.name,
        mountParcel: this.mountParcel,
        singleSpa: this.singleSpa
      });
    }
  },
  handleInstance: app => {
    app.use(router);
  }
});

export const bootstrap = vueLifecycles.bootstrap;
export const mount = vueLifecycles.mount;
export const unmount = vueLifecycles.unmount;
```

7. Update **src/App.vue**:

```
<template>
  <div id="nav">
    <router-link to="/poc-vue">Home</router-link> |
    <router-link to="/poc-vue/a-com">A component</router-link>
  </div>
  <router-view/>
</template>

<style>
#app {
  font-family: Avenir, Helvetica, Arial, sans-serif;
  -webkit-font-smoothing: antialiased;
  -moz-osx-font-smoothing: grayscale;
  text-align: center;
```

```
  color: #2c3e50;
}

#nav {
  padding: 30px;
}

#nav a {
  font-weight: bold;
  color: #2c3e50;
}

#nav a.router-link-exact-active {
  color: #42b983;
}
</style>
```

8. Add **src/set-public-path.js**:

```
import { setPublicPath } from "systemjs-webpack-interop";

setPublicPath("@obaranovskyi/poc-vue");
```

9. Install `systemjs-webpack-interop` module:

```
npm install systemjs-webpack-interop -S
```

10. Install `vue-router`, (we need `^4.0.0-0` and greater)

```
npm install vue-router
```

Note: alternatively, you can put `"vue-router": "^4.0.0-0",` into your *dependencies* in the ***package.json*** and run in the command line `npm install`.

11. Start the project:

```
npm run serve
```

The Shell project updates:

12. Update import map in the ***src/index.ejs:***

```
...
<script type="systemjs-importmap">
    {
      "imports": {
        "react":
"https://cdn.jsdelivr.net/npm/react@16.13.1/umd/react.production.min.
js",
        "react-dom": "https://cdn.jsdelivr.net/npm/react-
```

```
dom@16.13.1/umd/react-dom.production.min.js",
        "vue":
"https://cdn.jsdelivr.net/npm/vue@2.6.11/dist/vue.min.js",
        "vue-router": "https://cdn.jsdelivr.net/npm/vue-
router@3.1.6/dist/vue-router.min.js",
        "@obaranovskyi/root-config": "//localhost:9000/obaranovskyi-
root-config.js",
        "@obaranovskyi/poc-react": "//localhost:8500/obaranovskyi-
poc-react.js",
        "@obaranovskyi/poc-angular": "//localhost:4200/main.js",
        "@obaranovskyi/poc-vue": "//localhost:8080/js/app.js"
      }
    }
</script>
...
```

13. Register app in the *src/obaranovskyi-root-config.ts*:

```
...
registerApplication(
  "@obaranovskyi/poc-vue",
  () => System.import("@obaranovskyi/poc-vue"),
  (location) => {
    return location.pathname.startsWith("/poc-vue");
  }
);
...
```

14. Update *src/microfrontend-layout-.html*:

```
...
<main>
    <route default>
      <ul>
          <li>
            <a href="/">Home</a>
          </li>
          <li>
            <a href="/poc-react">React</a>
          </li>
          <li>
            <a href="/poc-angular">Angular</a>
          </li>
          <li>
            <a href="/poc-vue">Vue</a>
          </li>
      </ul>
    </route>
</main>
...
```

1. Create a folder for the project:

```
mkdir poc-svelte && cd poc-svelte
```

2. Setup project using Single-Spa CLI:

```
create-single-spa --framework svelte
```

and choose:

- Directory for new project — `.`
- Which package manager do you want to use? — `npm`
- Organization name — `obaranovskyi`
- Project name — `poc-svelte`

3. Install dependencies:

```
npm install
```

4. Start the project:

```
npm start
```

The Shell project updates:

5. Update import maps in the *src/index.ejs*:

```
...
<script type="systemjs-importmap">
    {
      "imports": {
        "react":
"https://cdn.jsdelivr.net/npm/react@16.13.1/umd/react.production.min.
js",
        "react-dom": "https://cdn.jsdelivr.net/npm/react-
dom@16.13.1/umd/react-dom.production.min.js",
        "vue":
"https://cdn.jsdelivr.net/npm/vue@2.6.11/dist/vue.min.js",
        "vue-router": "https://cdn.jsdelivr.net/npm/vue-
router@3.1.6/dist/vue-router.min.js",
        "@obaranovskyi/root-config": "//localhost:9000/obaranovskyi-
root-config.js",
        "@obaranovskyi/poc-react": "//localhost:8500/obaranovskyi-
poc-react.js",
        "@obaranovskyi/poc-angular": "//localhost:4200/main.js",
        "@obaranovskyi/poc-vue": "//localhost:8080/js/app.js",
        "@obaranovskyi/poc-svelte": "//localhost:5000/obaranovskyi-
poc-svelte.js"
      }
    }
</script>
...
```

6. Register app in the *src/obaranovskyi-root-config.ts*:

```
...
registerApplication(
  "@obaranovskyi/poc-svelte",
  () => System.import("@obaranovskyi/poc-svelte"),
```

```
  (location) => {
    return location.pathname.startsWith("/poc-svelte");
  }
);
...
```

7. Update menu content in the *src/microfrontend-layout.html*:

```
...
<main>
    <route default>
      <ul>
          <li>
            <a href="/">Home</a>
          </li>
          <li>
            <a href="/poc-react">React</a>
          </li>
          <li>
            <a href="/poc-angular">Angular</a>
          </li>
          <li>
            <a href="/poc-vue">Vue</a>
          </li>
          <li>
            <a href="/poc-svelte">Svelte</a>
          </li>
      </ul>
    </route>
  </main>
...
```

Conclusion

Thank you guys for reading. I hope you enjoyed it and learned some new stuff related to JavaScript. Please subscribe and press the ‘Clap’ button if you like this article.

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Written by Oleh Baranovskyi

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almost 2 years ago

```
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() => System.import("@obaranovskyi/poc-vue"),
(location) => {
return location.pathname.startsWith("/poc-vue");
}
);
```

Hi this line shows me an error) => System.import("@obaranovskyi/poc-vue"),

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Type '() => Promise<System.Module>' is not assignable to type.....

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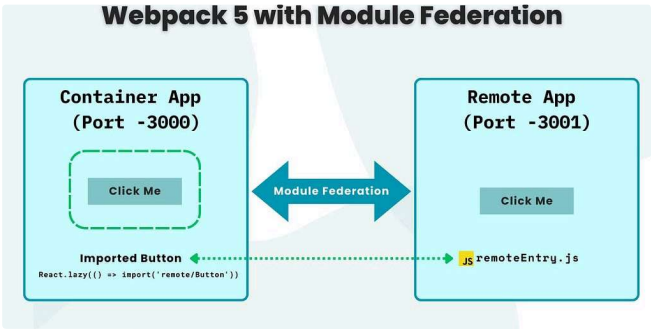

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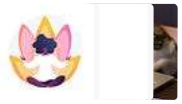

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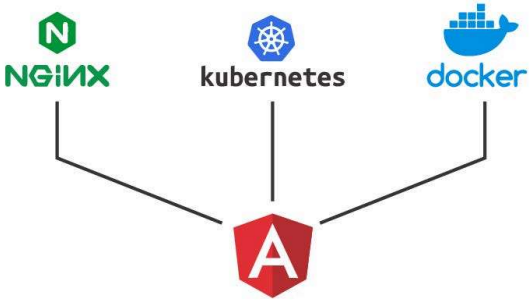

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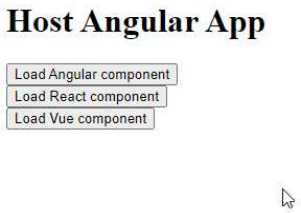

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