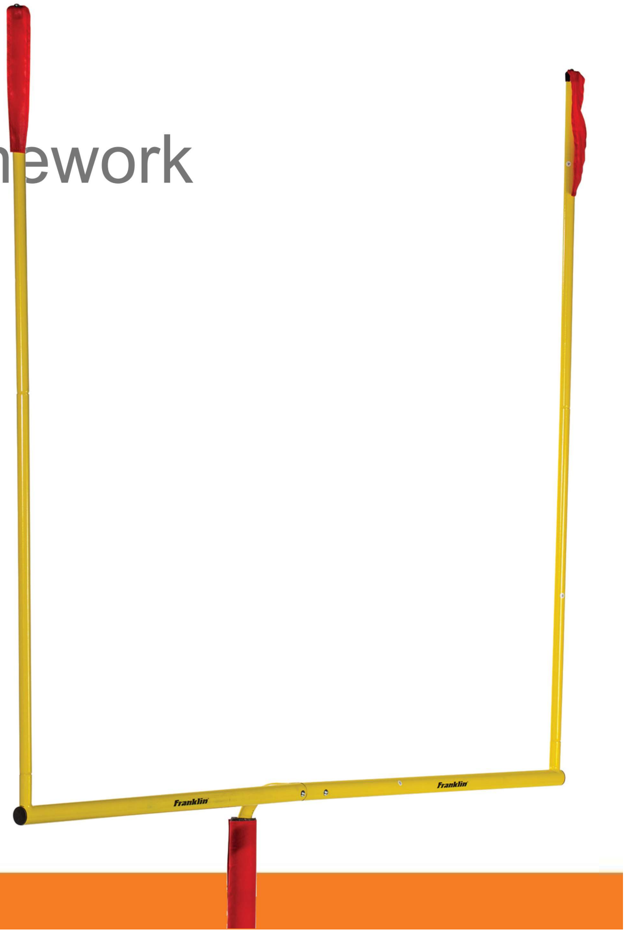
Overview

Develop Intelligence

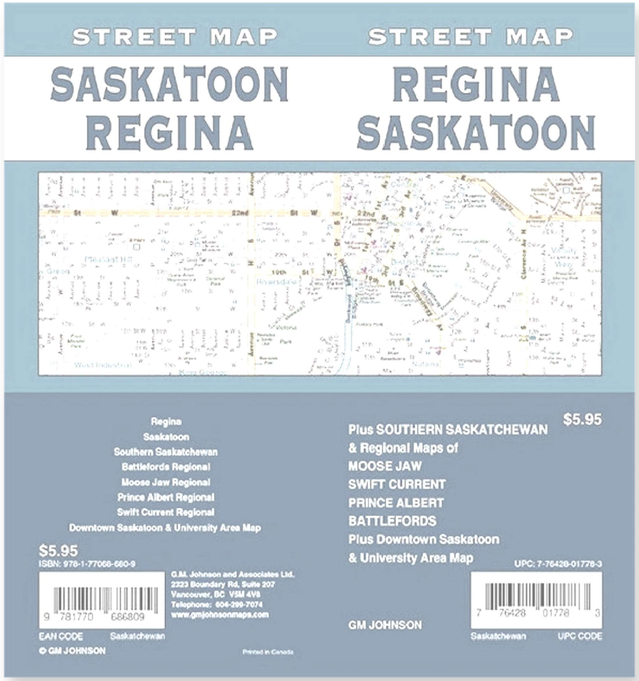
Goals

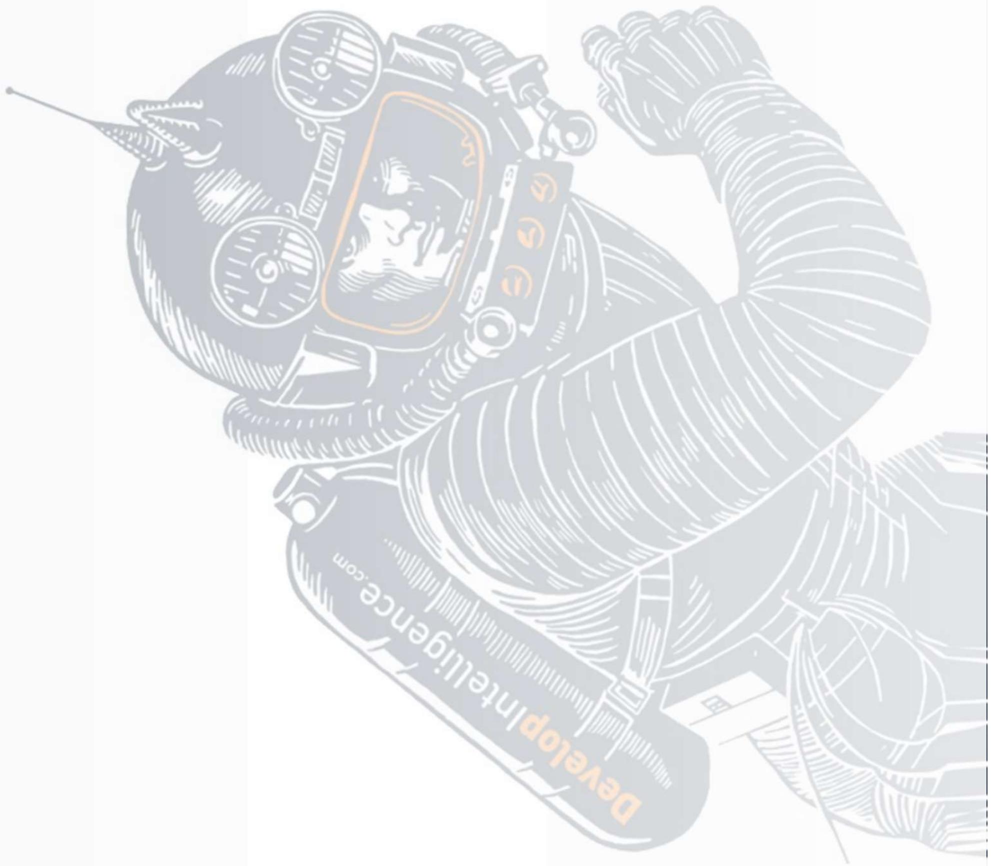
1. Compare React v. Angular
2. Explain the advantage of using a React framework
3. Describe Vite



Roadmap

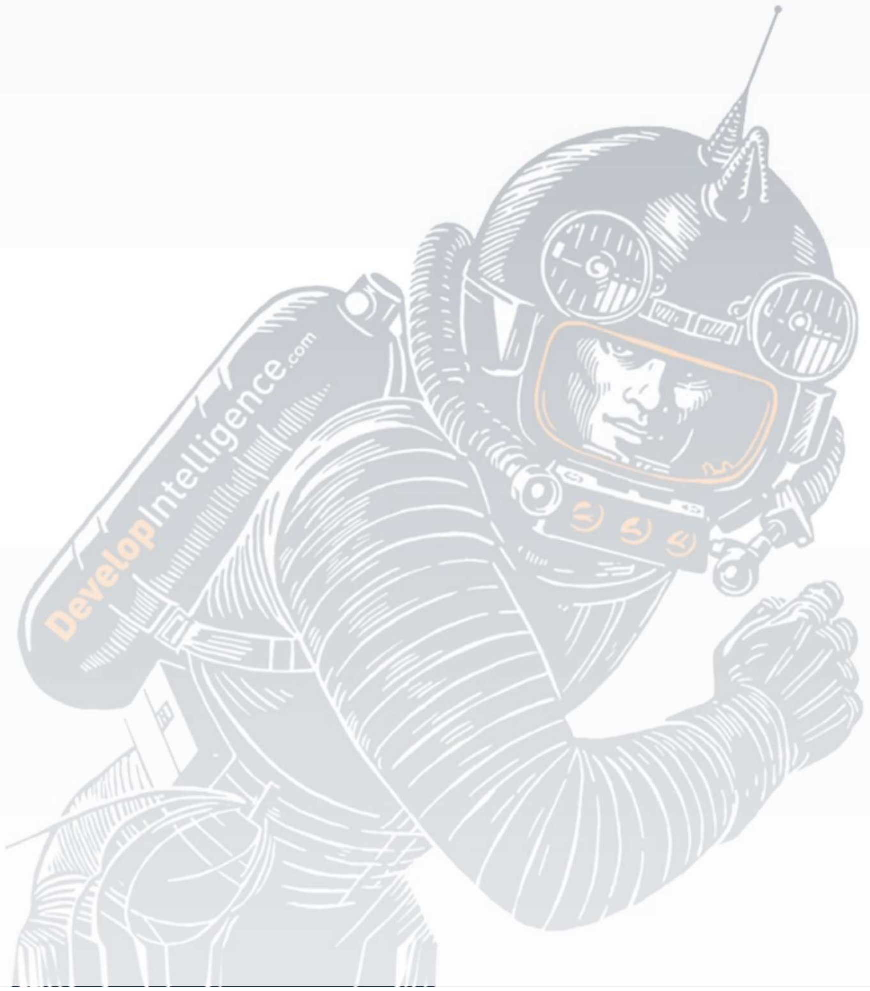
1. What's React?
2. Creating a React App
3. Project Anatomy




DevelopIntelligence.com

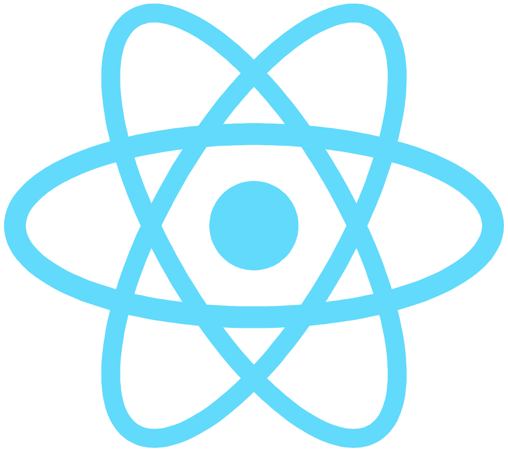
What's React?

Develop
Intelligence



What's **React**?

- **Library** for creating user interfaces
- Created at Facebook in 2011
- Open source
- Hugely popular: **40% of new web apps**
    - ○ (Angular is ~18% and falling)



Compared to Angular

Angular	React
Framework	Library
Opinionated	Laissez-faire
Batteries included	A la carte
Templates	JSX
2-way binding	Unidirectional data flow
Component-based	Same!

React is a Library

- Library for interactive UIs
- View-only
  - **Not** MVC
  - **Not** bundling
  - **Not** transpiling

React is an **Architecture**

- React software outputs a dynamic tree
  - Of DOM nodes
  - Of iOS controls
  - Etc...
- A ***renderer*** mediates between React and its in-memory tree
- ***Reconciliation*** makes the host tree match the in-memory tree

React is an **Ecosystem**

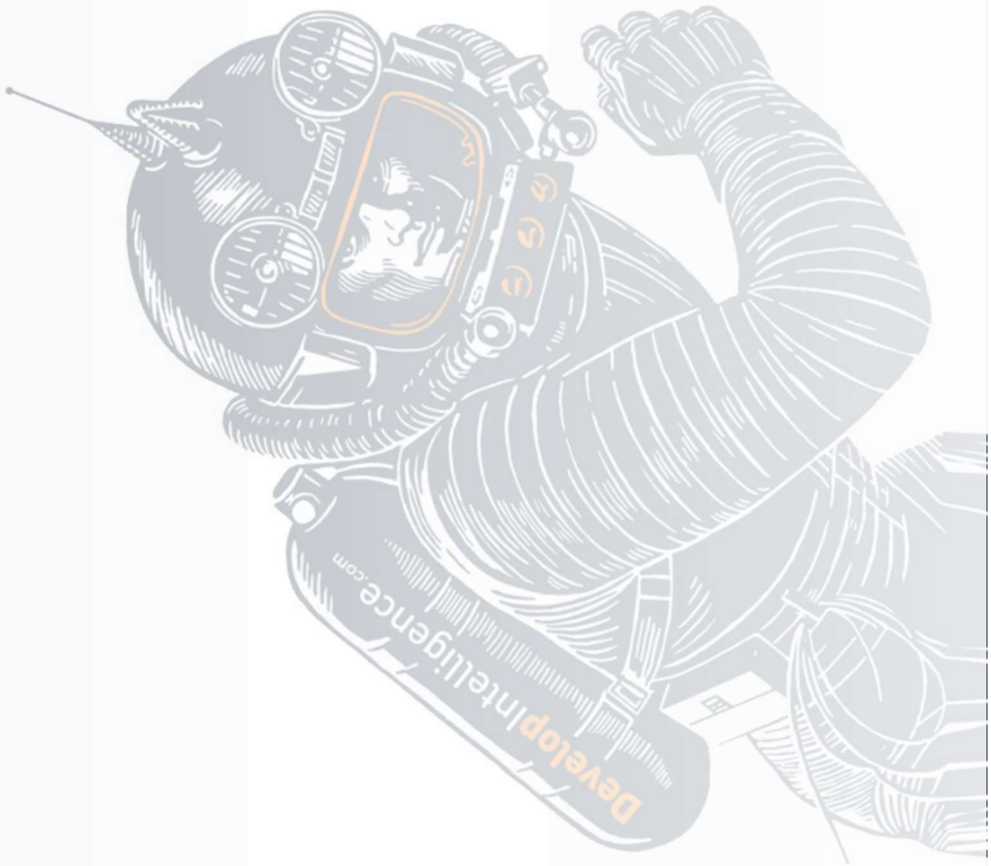
- React is 'just a library'
- Most projects rely on a vast ecosystem for other things

Things You Might Need

- **Dependency management** - npm, yarn
- **Bundler** - Webpack, Rollup
- **Compiler** -- jsx, typescript, modern javascript
- **SSR** - Next.js
- **Development tools** - Hot reload, etc.
- **State management** - Zustand, Redux
- **Styling** - CSS / CSS-in-js
- **Routing** - React Router
- **HTTP** - React Query

Frameworks

- You can configure everything a-la-carte
  - Configuration is hard
  - Making choices is harder
  - Upgrades are the worst
- Or you can use a more opinionated framework
  - Next.js
  - Remix
  - Astro

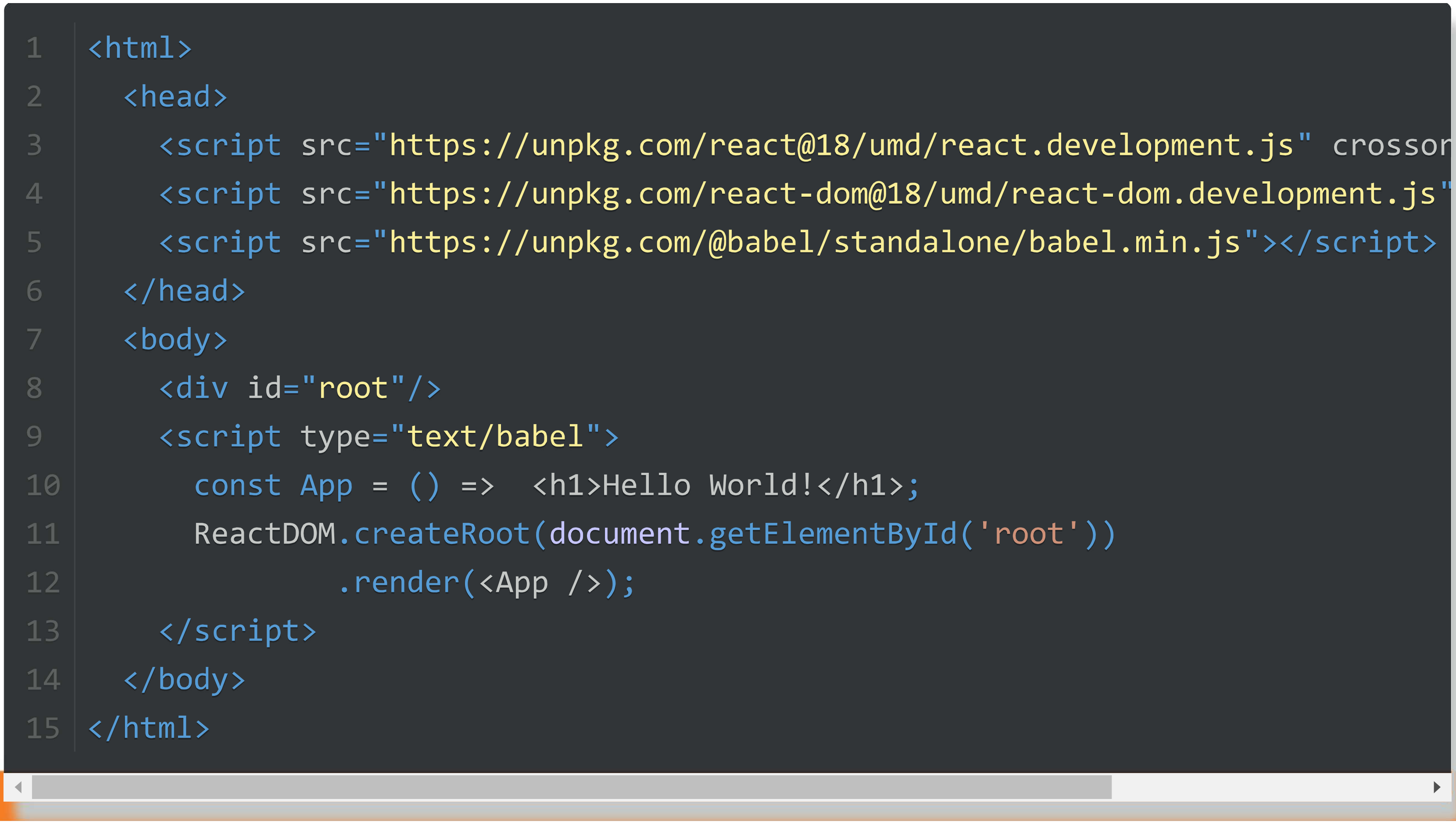

DevelopIntelligence.com

Creating a React App

Option 0: Framework-Free

- All you really need--
  - **React** - For the core framework
  - **React-dom** - For web stuff
  - **Babel** - For JSX, and ES6+
- **Pros** No build process, Good for learning
- **Cons** No build process, no web server, not industrial strength

Demo: Framework-Free



```
<html>
  <head>
    <script src="https://unpkg.com/react@18/umd/react.development.js" crossor
    <script src="https://unpkg.com/react-dom@18/umd/react-dom.development.js"
    <script src="https://unpkg.com/@babel/standalone/babel.min.js"></script>
  </head>
  <body>
    <div id="root"/>
    <script type="text/babel">
      const App = () =>  <h1>Hello World!</h1>;
      ReactDOM.createRoot(document.getElementById('root'))
              .render(<App />);
    </script>
  </body>
</html>
```

Option 0.5: `create-react-app`

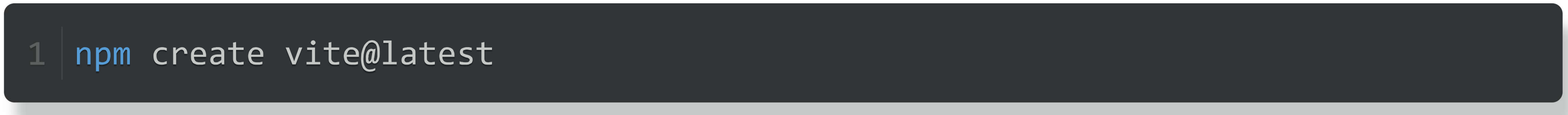
- Go-to project scaffolding for a long time
- There are better options now
- **Pros:** Familiar to lots of React developers
- **Cons:** DX, Not really evolving

- Magic words:

```
npx create-react-app some-spa
```

Option 1: Vite

- Modern front-end tooling
- Major parts:
  - Dev server with Hot Module Replacement
  - Compiles with esbuild
  - Builds with Rollup
  - Provides scaffolding for various project types
- Magic words:



```
npm create vite@latest
```

Vite: Pros and Cons

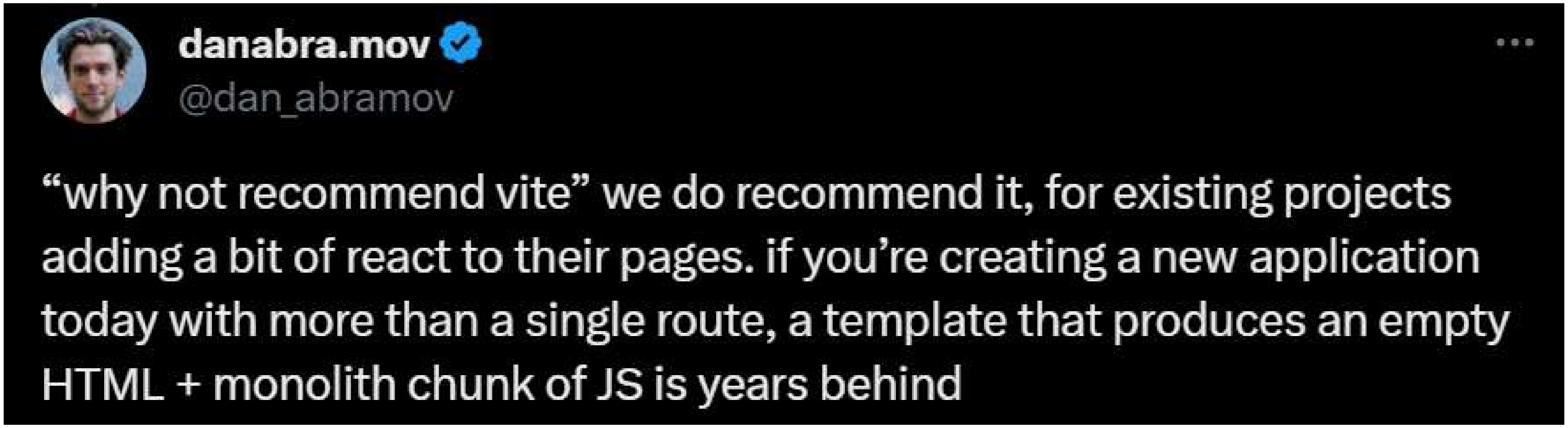
Pro

- Unopinionated (Relatively)
  - ○ Good for learning plain React
  - ○ Good for building pure old-school SPAs
- Great DX: Fast HMR, small bundles

Con

- Unopinionated (Relatively)
  - ○ Still lots of configuration todo before production
- On your own for code splitting, routing, SSR

Dan on Vite



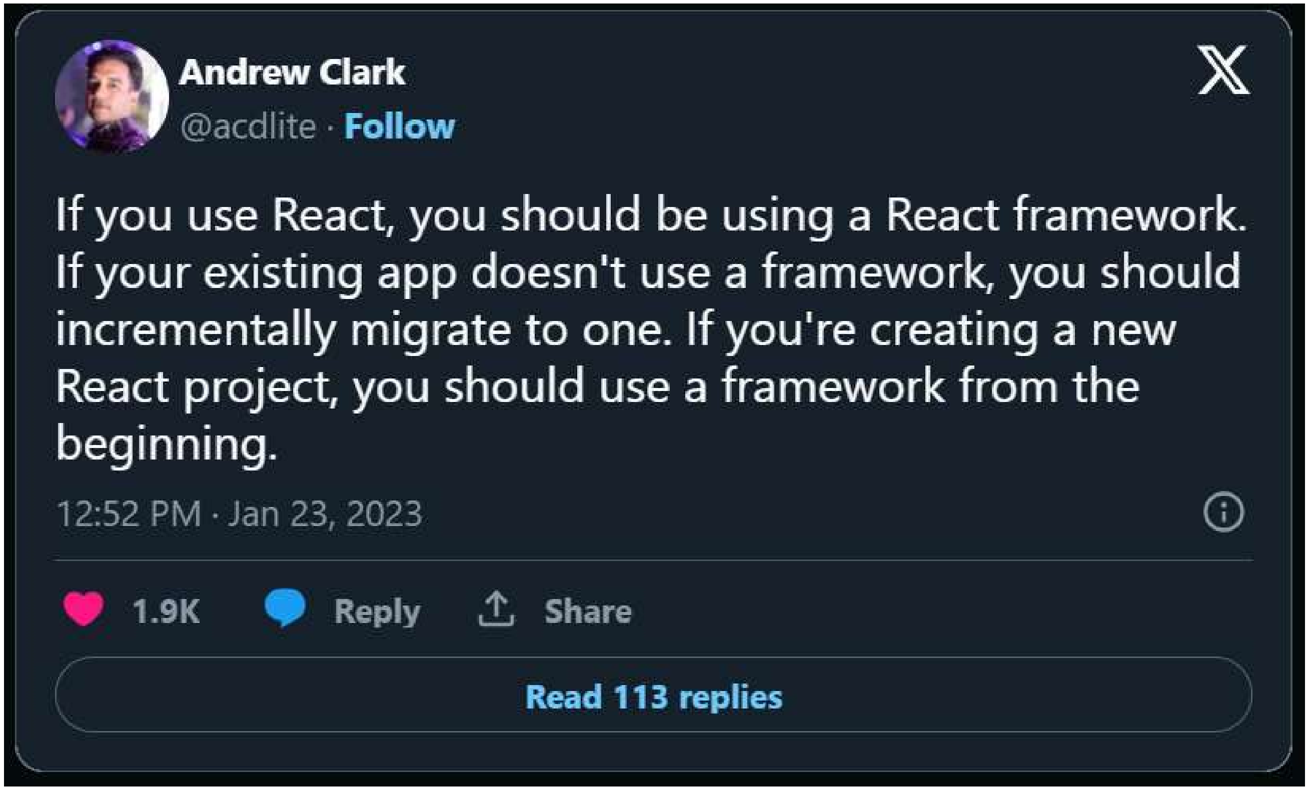
danabra.mov

@dan_abramov

“why not recommend vite” we do recommend it, for existing projects adding a bit of react to their pages. if you’re creating a new application today with more than a single route, a template that produces an empty HTML + monolith chunk of JS is years behind

Harsh!

Consensus: Use a Framework



Andrew Clark

@acdlite · Follow

If you use React, you should be using a React framework. If your existing app doesn't use a framework, you should incrementally migrate to one. If you're creating a new React project, you should use a framework from the beginning.

12:52 PM · Jan 23, 2023

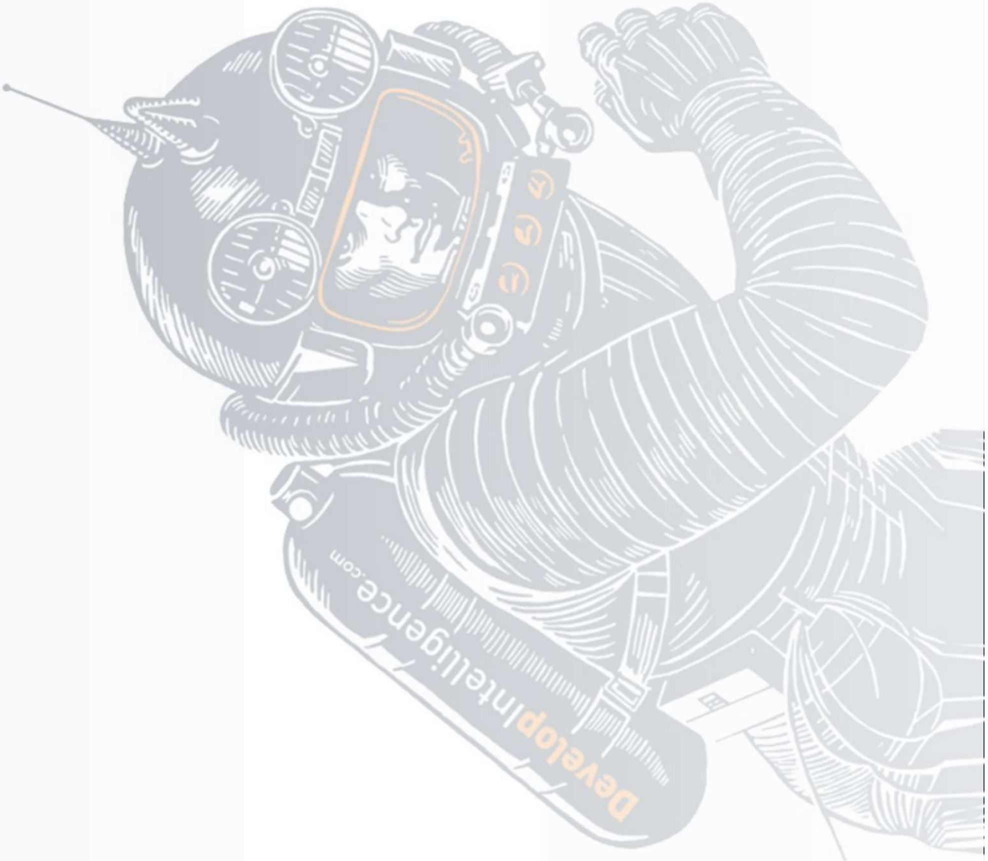
Lab: Create a React App

1. Use Vite to scaffold a new project

```
npm create vite@latest some-throwaway-project
cd ./some-throwaway-project
npm install
code .
```

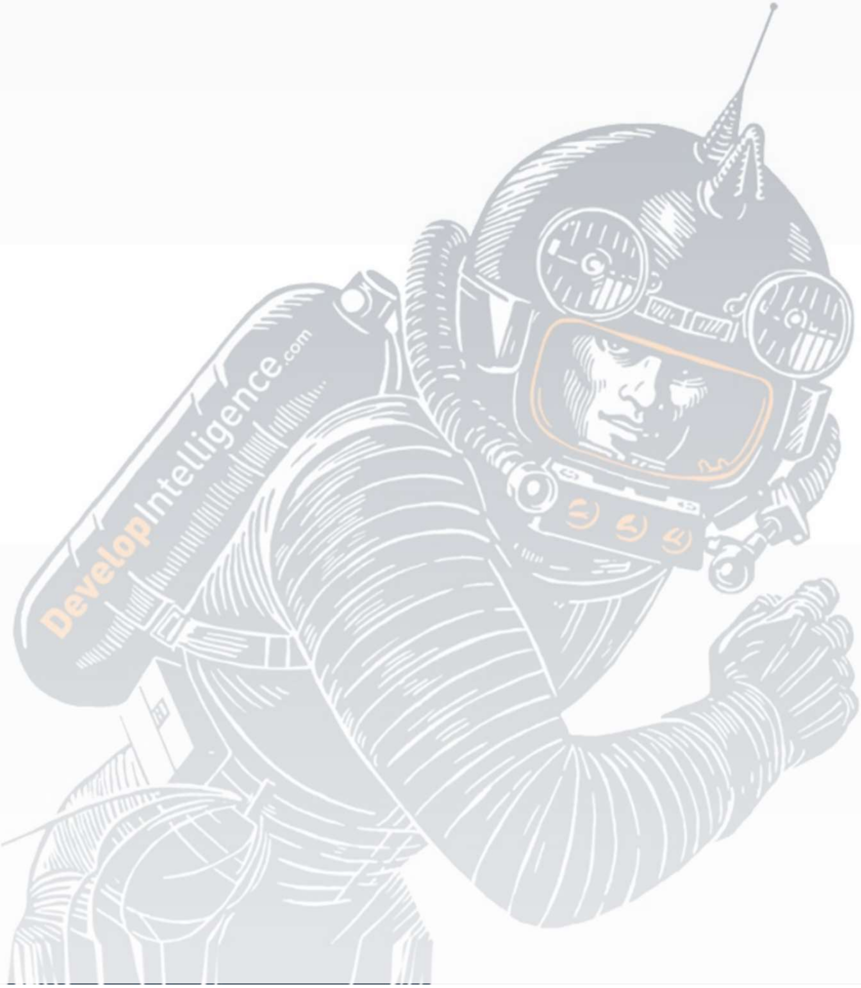
2. Examine the project
3. Fire up the dev server

```
npm run dev
```



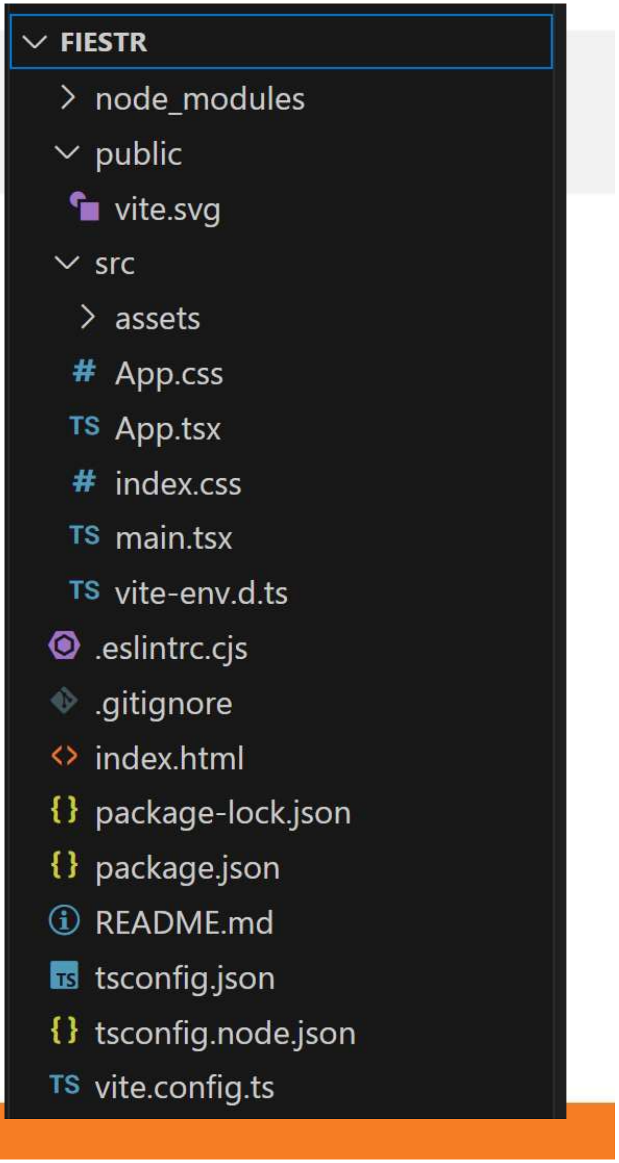
DevelopIntelligence

Project Anatomy



Folder Structure

- React is flexible, so projects are different
- Usually a project consists of
    - **Root** contains tooling configuration. e.g. `package.json`
    - **/public** contains everything *not* managed by the build system
    - **/src** holds all executable code, styling, and assets



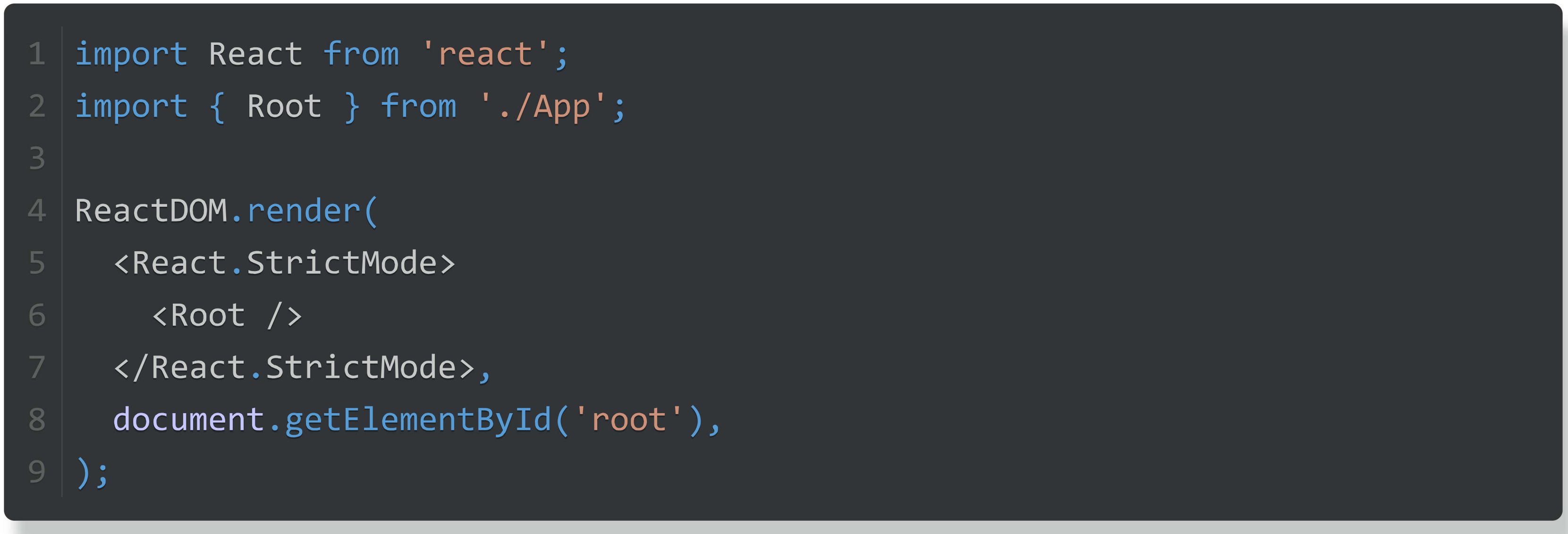
```
∨ FIESTR
  > node_modules
  ∨ public
     vite.svg
  ∨ src
    > assets
    # App.css
    TS App.tsx
    # index.css
    TS main.tsx
    TS vite-env.d.ts
  .eslintrc.cjs
  .gitignore
  <> index.html
  {} package-lock.json
  {} package.json
  ⓘ README.md
  TS tsconfig.json
  {} tsconfig.node.json
  TS vite.config.ts
```

Familiar Faces

- If you know Angular, lots of the files should look familiar
  - **`tsconfig.json`** -
  - **`package.json`** /**`package-lock.json`** -

File: index.tsx

- Entrypoint
- Loads the root component (often called **App**)



```tsx
import React from 'react';
import { Root } from './App';

ReactDOM.render(
  <React.StrictMode>
    <Root />
  </React.StrictMode>,
  document.getElementById('root'),
);
```

About React.StrictMode

- Turns on dev-mode
  - Double-rendering, double-effects
  - Checks for deprecations

Develop
Intelligence

Review

1. Compare React v. Angular
2. Explain the advantage of using a React framework
3. Describe Vite