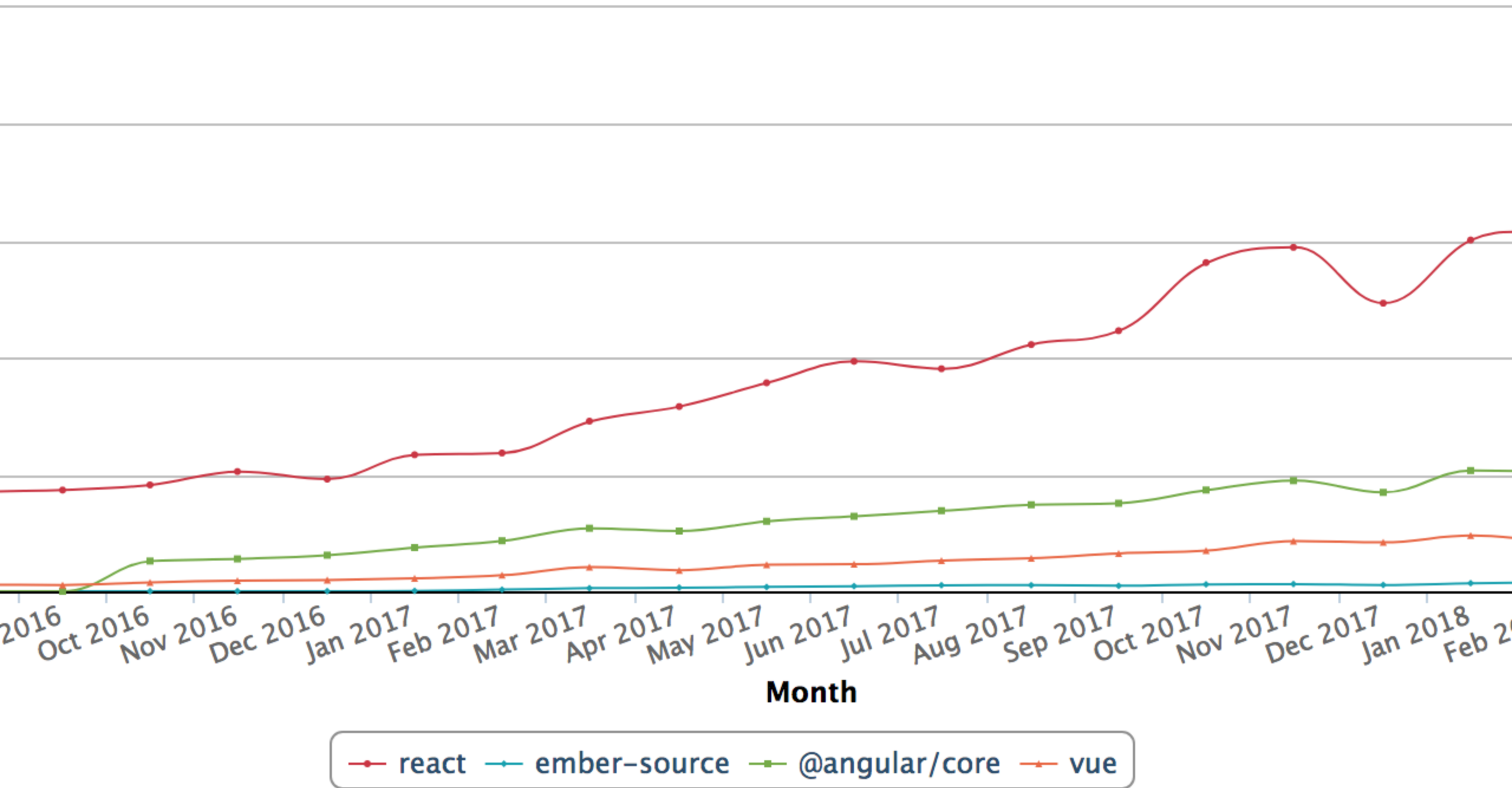


AMBITIOUS REACT APPLICATIONS

WHY REACT?

Downloads per month

Click and drag in the plot to zoom in



"View layer"

Focussed
Flexible
Lightweight
Innovative
Fatigue



Framework Spectrum



"All the things"

Opinionated
Productive
Bloated
Stable
Stagnation

PHILOSOPHY

EMBER

Convention > Configuration

REACT

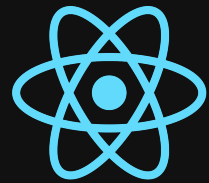
`ui = f(s)`

TOOLING

EMBER CLI

```
ember new my-new-app  
cd my-new-app  
ember test  
ember serve  
ember generate route items
```

REACT



[create-react-app](#)



[Next.js](#)



[Gatsby](#)

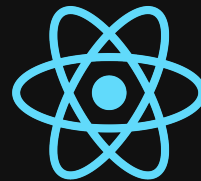
Like Ember CLI, each:

- installs dependencies & tooling
- insulates devs from low-level tooling
- comes with (a few) opinions (folders, etc)
- has commands to run & build app

Emphasize docs/examples for the rest:

- styling components (CSS in JS, Sass, etc)
- installing & using libraries
- writing & running tests
- deployment

CREATE-REACT-APP



Key Feature: official support/docs

Best Uses: learning react, simple apps

Owner: Facebook

NEXT .JS

Key Feature: SSR, route-based data fetching & code-splitting

Best Uses: data-centric apps

Owner: Zeit (Now)



Key Feature: static site generation, ecosystem

Best Uses: content-centric apps like blogs

Owner: [Gatsby.com](https://www.gatsby.com)

WHICH DID I CHOOSE?

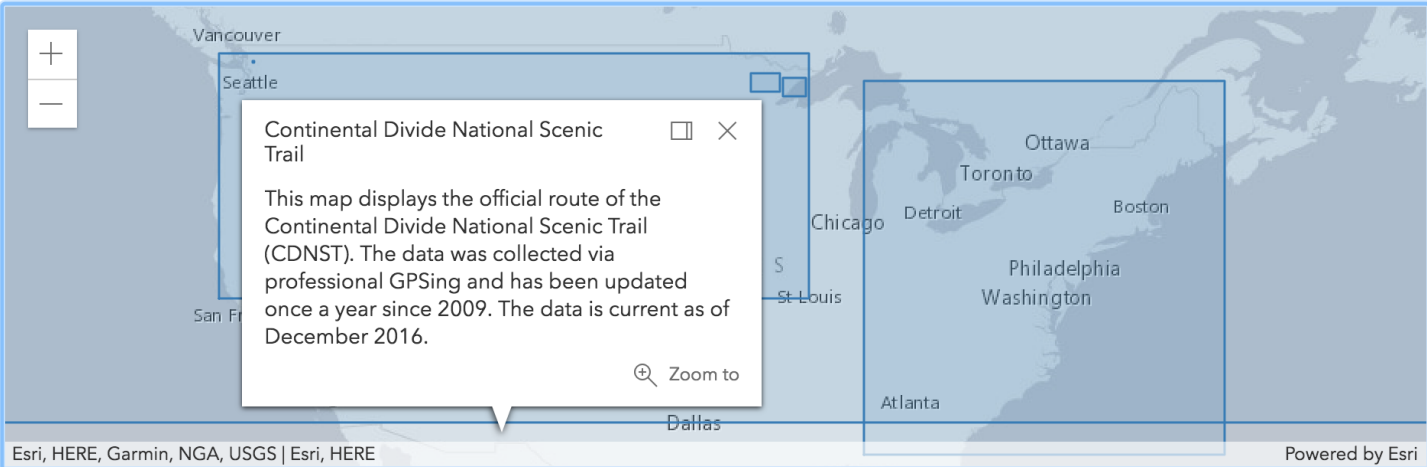
create-react-app

... and Next.js

CREATE ARCGIS APP

Ambitious ArcGIS App Home Items Tom Wayson ▾

Your search for "trails" yielded 44591 items Search



Esri, HERE, Garmin, NGA, USGS | Esri, HERE Powered by Esri

Title	Type	Owner
Continental Divide National Scenic Trail	Web Map	kshakarjian
INCOG - Turkey Mountain Trail Map	Web Map	bgibson_INCOG
Gitchi-Gami State Trail Interactive Map Tour	Web Mapping Application	moore525

[create-arcgis-app](https://www.create-arcgis-app.com)

NEXT ARCGIS APP

The screenshot shows a web browser window with the URL `https://next-arcgis-app.now.sh/items?q=trails`. The page header includes 'Next ArcGIS App', navigation links for 'Home' and 'Items', and a user profile for 'Tom Wayson'. The main content area displays the search results for 'trails', indicating that 44,638 items were found. A map is shown with a blue line representing the Continental Divide National Scenic Trail. A pop-up window provides details about the trail, including its official route and the date of the last data update (December 2016). Below the map is a table listing the search results.

Your search for "trails" yielded 44638 items

trails Search

Continental Divide National Scenic Trail

This map displays the official route of the Continental Divide National Scenic Trail (CDNST). The data was collected via professional GPSing and has been updated once a year since 2009. The data is current as of December 2016.

Zoom to

Title	Type	Owner
Continental Divide National Scenic Trail	Web Map	kshakarjian
INCOG - Turkey Mountain Trail Map	Web Map	bgibson_INCOG

[next-arcgis-app](https://next-arcgis-app.now.sh)

ARCHITECTURE

EMBER

Routes drive the application

Plan application as a tree of nested **routes**

```
/application
  route
  template
  /index
    controller
    template
  /items
    route
    controller
    template
```

For cross-cutting concerns use **services** (i.e. `session`)

REACT

(almost) Everything is a component

Ember	React
Router	Component
Route	Component
Controller	Component (JS)
Template	Component (JSX)
Component	Component
Helper	Component (SFC)
Service	Context or Redux
Util	Util
Ember Data	GraphQL
Initializer	index.js

Plan application as a tree of **components**

```
index.js
<Router>
  <App>
    <AppNav>
    <Route match="/">
      <Home>
    <Route match="/items">
      <Items>
        <ItemsLayout>
```

For cross-cutting concerns use [Context](#)

LIFECYCLE METHODS

Ember

React

init()

constructor()

didReceiveAttrs()

getDerivedStateFromProps()

willRender()

render()

didInsertElement()

componentDidMount()

didUpdateAttrs()

componentDidUpdate()

willDestroyElement()

componentWillUnmount()

LIBRARIES

REACTSTRAP

~~ember install ember-bootstrap~~

```
npm install --save bootstrap  
npm install --save reactstrap
```

```
import 'bootstrap/dist/css/bootstrap.css';
```

ARCGIS UTILS FOR ANY FRAMEWORK

ArcGIS REST JS

Guides API Reference  Menu

ArcGIS REST API JavaScript Client

[arcgis-rest-js](#)

```
ember install torii-provider-arcgis  
ember install ember-arcgis-portal-services
```

```
npm install --save @esri/arcgis-rest-items  
npm install --save @esri/arcgis-rest-auth  
npm install --save @esri/arcgis-rest-request
```

AUTH

Sign In (utils/session.js)

```
import { UserSession } from '@esri/arcgis-rest-auth';
import env from '../config/environment';
import * as Cookies from 'js-cookie';

const SESSION_COOKIE_NAME = `${env.cookiePrefix}_session`;

/**
 * sign in using OAuth pop up
 */
export function signIn() {
  const { clientId, portal } = env;
  return UserSession.beginOAuth2({
    clientId,
    portal,
    popup: true,
    redirectUri: `${window.location.origin}/redirect.html`
  }).then(session => {
    // save session for next time the user loads the app
  });
}
```

Sign In (public/redirect.html)

<DOCTYPE html>

Sign In (utils/session.js)

```
const SESSION_COOKIE_NAME = `${env.cookiePrefix}_session`;

/**
 * sign in using OAuth pop up
 */
export function signIn() {
  const { clientId, portal } = env;
  return UserSession.beginOAuth2({
    clientId,
    portal,
    popup: true,
    redirectUri: `${window.location.origin}/redirect.html`
  }).then(session => {
    // save session for next time the user loads the app
    saveSession(session);
    return session;
  });
}
```

Sign In/Out (App.jsx)

```
class App extends React.Component {
  constructor(props) {
    super(props);
    // set application state
    // NOTE: when storing objects like session or user in state
    // React uses the Object.is() comparison algorithm to detect changes
    // and changes to child properties won't trigger a re-render
    // which is fine for this application, b/c we only ever set session/user
    this.state = {
      session: props.previousSession
    };
  }
  signIn = () => {
    signIn().then(session => {
      // make session available to the app
      this.setState({ session });
      // get user info
    });
  }
}
```

ITEMS

Items Route (Ember)

```
import Route from '@ember/routing/route';  
import { inject } from '@ember/service';
```

Items Component (React)

```
import React from 'react';
import { Alert } from 'reactstrap';
import { searchItems } from '@esri/arcgis-rest-items';
import { parseSearch, didSearchParamsChange } from '../utils/search';
import ItemsLayout from '../components/ItemsLayout';

class Items extends React.Component {
  constructor(props) {
    super(props);
    this.state = {
      error: undefined,
      results: undefined,
      total: 0
    };
  }
  onParamsChange = (q, start) => {
    // update the route query params after the user either
    // submits the inline search form or links to a new page
  }
}
```

MAPS

ESRI-LOADER

- create-react-app
- Next.js
- Gatsby

@ARCGIS/WEBPACK-PLUGIN

- ~~create-react-app~~
- ~~Next.js~~
- ~~Gatsby~~

@ARCGIS/WEBPACK-PLUGIN

[Roll your own](#)

```
git init
npm init
npm i -S react react-dom
npm i -D webpack webpack-cli webpack-dev-server
npm i -D @arcgis/webpack-plugin
npm i -D @babel/core @babel/preset-env @babel/preset-react babel-loader babel-
plugin-transform-es2015-modules-amd
```

ESRI-LOADER

```
ember install ember-esri-loader
```

```
npm install --save esri-loader
```

MAP UTIL CODE

 just **copy** + **paste** 

Lifecycle Methods (Ember)

```
const { symbol, popupTemplate } = config.APP.map.ITEMEXTENTS;
showItemsOnMap(this._view, this.items, symbol, popupTemplate);
},

// wait until after the component is added to the DOM before creating the map
didInsertElement () {
  this._super(...arguments);
  // create a map at this element's DOM node
  loadMap(this.elementId, config.APP.map.options)
  .then(view => {
    // hold onto a reference to the map view
    this._view = view;
    this.showItems();
  });
},

// whenever items change, update the map
didUpdateAttrs () {
```

Lifecycle Methods (React)

```
showItems() {  
  const { symbol, popupTemplate } = config.itemExtents;  
  showItemsOnMap(this._view, this.props.items, symbol, popupTemplate);  
}  
  
// react lifecycle methods  
// wait until after the component is added to the DOM before creating the map  
componentDidMount() {  
  // create a map at this element's DOM node  
  loadMap(this.mapNode.current, config.options).then(view => {  
    // hold onto a reference to the map view  
    this._view = view;  
    // show the initial items on the map  
    this.showItems();  
  });  
}
```

DOM Node (Ember)

```
export default Component.extend({
  classNames: ['extents-map'],

  // show items on the map w/ the symbol and popupTemplate from the config
  showItems () {
    const { symbol, popupTemplate } = config.APP.map.itemExtents;
    showItemsOnMap(this._view, this.items, symbol, popupTemplate);
  },

  // wait until after the component is added to the DOM before creating the map
  didInsertElement () {
    this._super(...arguments);
    // create a map at this element's DOM node
    loadMap(this.elementId, config.APP.map.options)
      .then(view => {
        // hold onto a reference to the map view
      })
  }
});
```

DOM Node (React)

```
// react lifecycle methods
// wait until after the component is added to the DOM before creating the map
componentDidMount() {
  // create a map at this element's DOM node
  loadMap(this.mapNode.current, config.options).then(view => {
    // hold onto a reference to the map view
    this._view = view;
    // show the initial items on the map
    this.showItems();
  });
}
componentDidUpdate(prevProps) {
  if (prevProps.items !== this.props.items && this._view) {
    this.showItems();
  }
}
```

TESTS

Feature	Ember	React
Helpers	ember-test-helpers	react-testing-library
Mocks	Sinon	Jest
Assertions	QUnit	Jest
Framework	QUnit	Jest
Runner	Testem	Jest

Jest - [react-testing-library](#).

DEPLOYMENT

~~ember install ember-cli-surge~~

Just follow [create-react-app deployment guide](#)

```
"predeploy": "yarn run build && mv build/index.html build/200.html",  
"deploy": "surge ./build create-arcgis-app.surge.sh",
```

CONCLUSION



QUESTIONS?