Madrid | November 30 - December 1, 2018

{codemotion}

Better performance for component-based web apps

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What we'll talk about

- Modern libraries/frameworks
- ES6
- Code Splitting
- CSS-in-JS
- Combine all to build sites with great performance

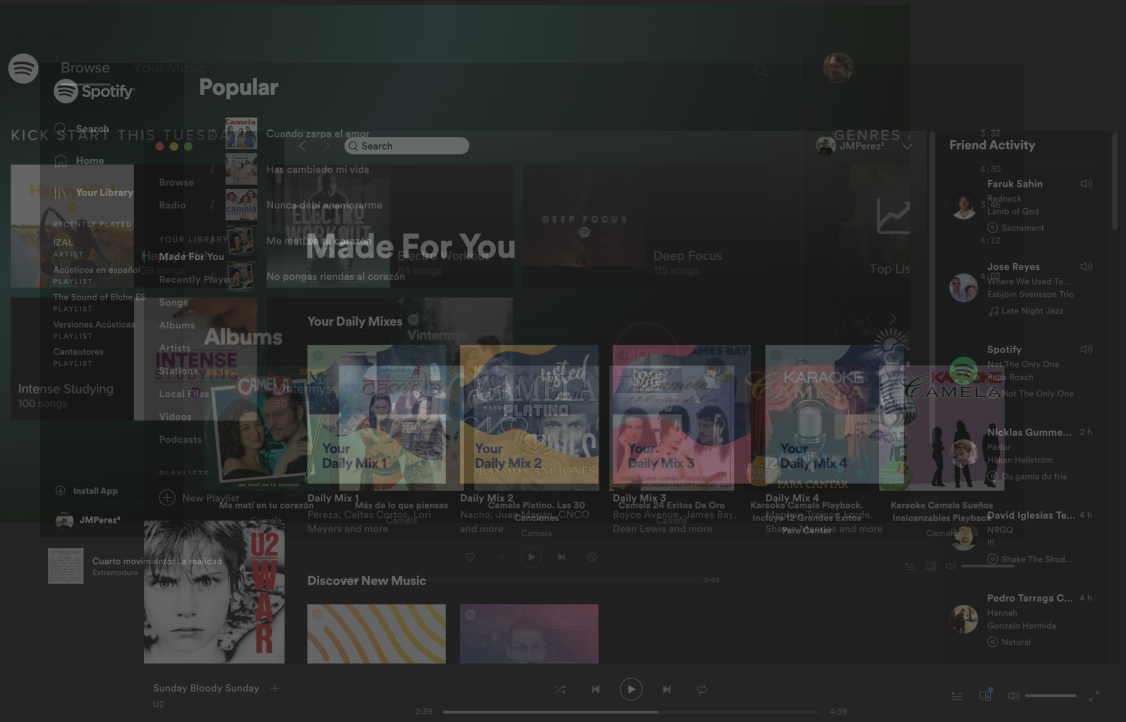
...and survive the JavaScript fatigue

Who I am

Senior Software Engineer at Spotify

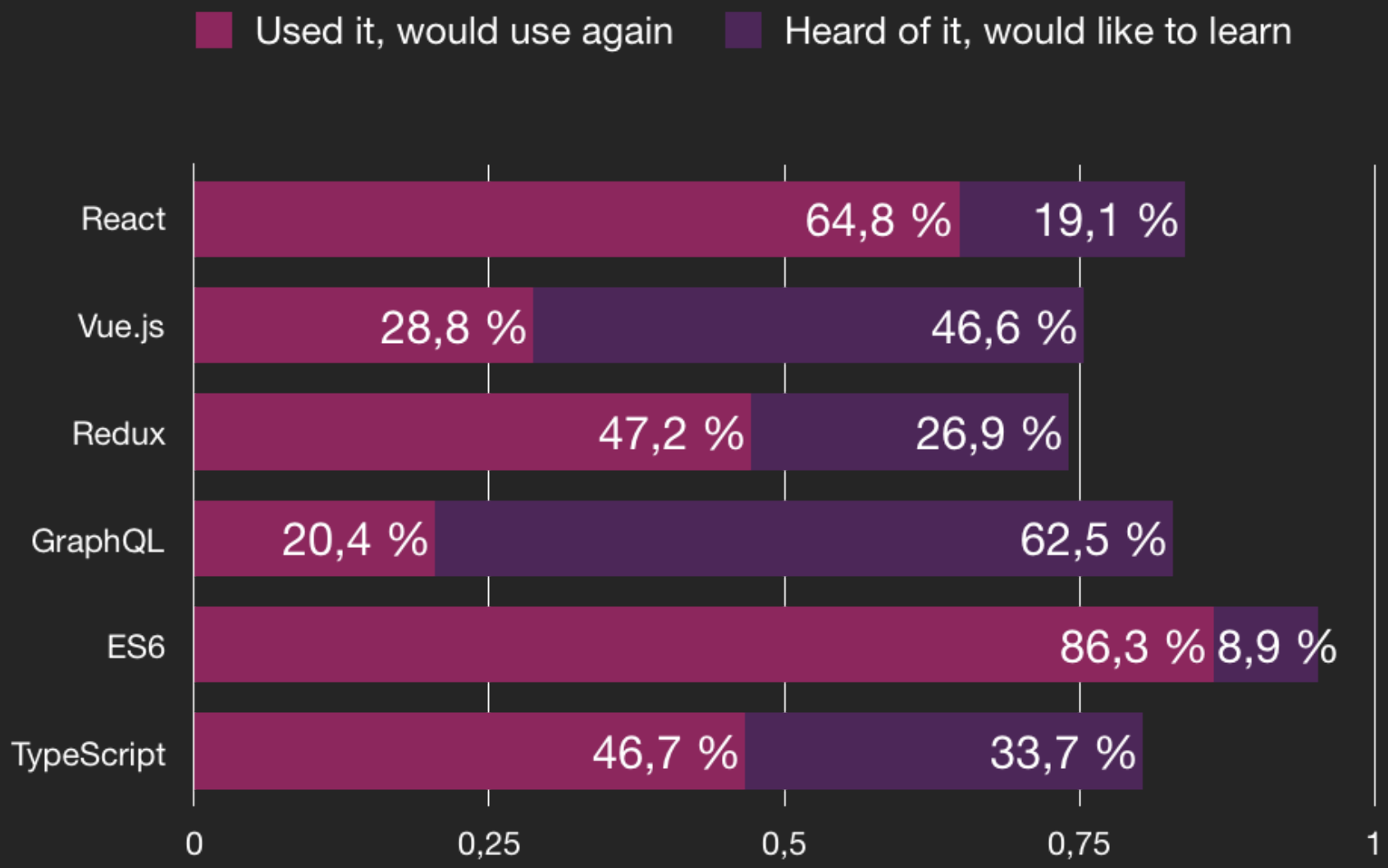
Google Developer Expert in Web Technologies

I build things using web



We ❤️ modern tools

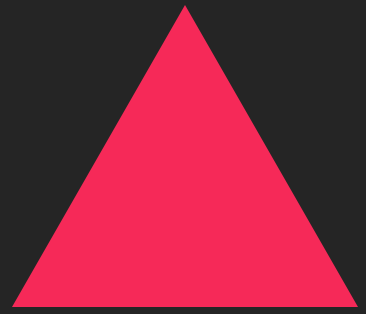

3
Omi
DAYS WITHOUT
NEW JAVASCRIPT
FRAMEWORK
2



Source: The State of Javascript 2018

Developer ergonomics

User experience



Do not blame the user

Low end device?

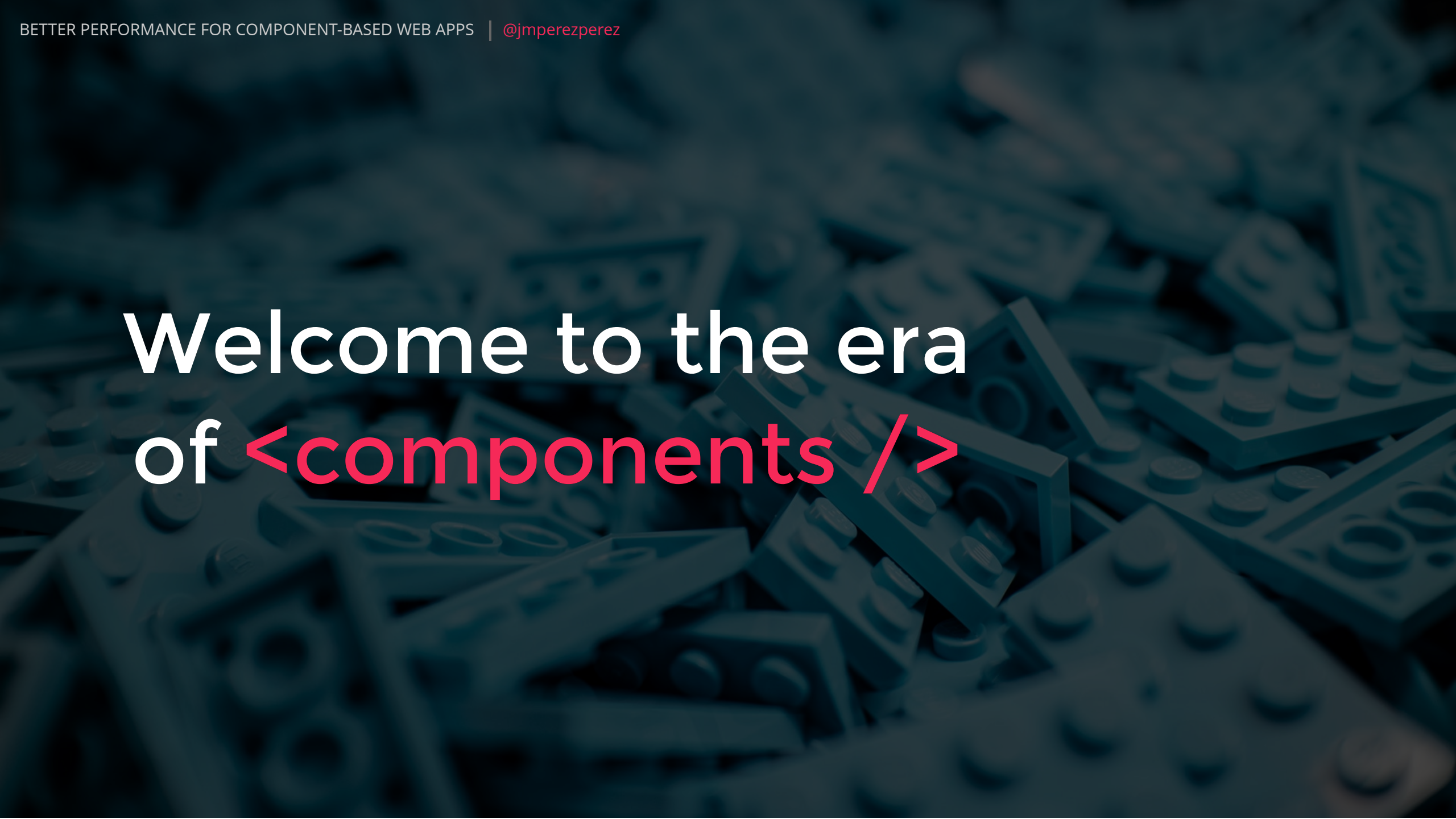
Might not afford new one

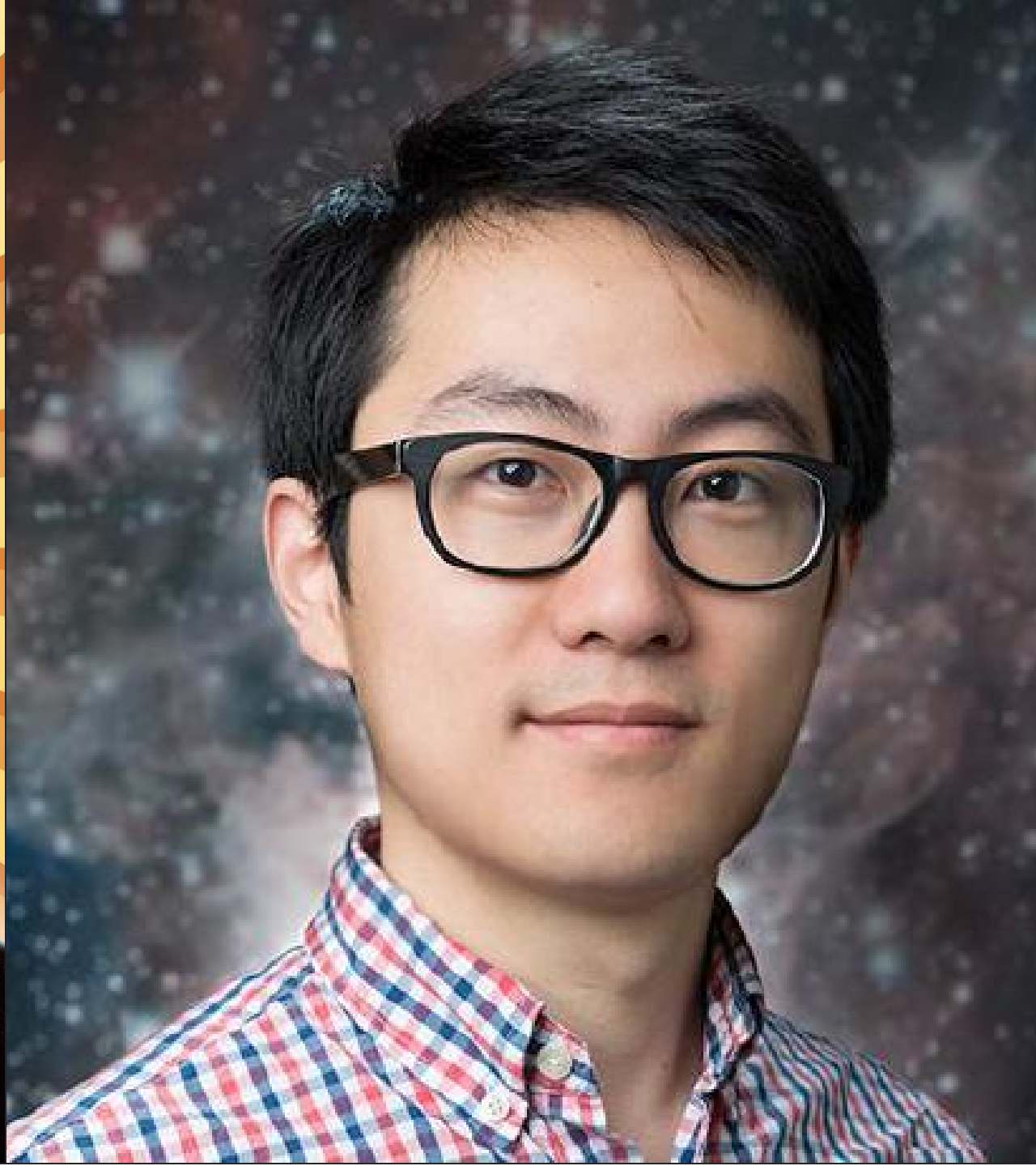
Old browser?

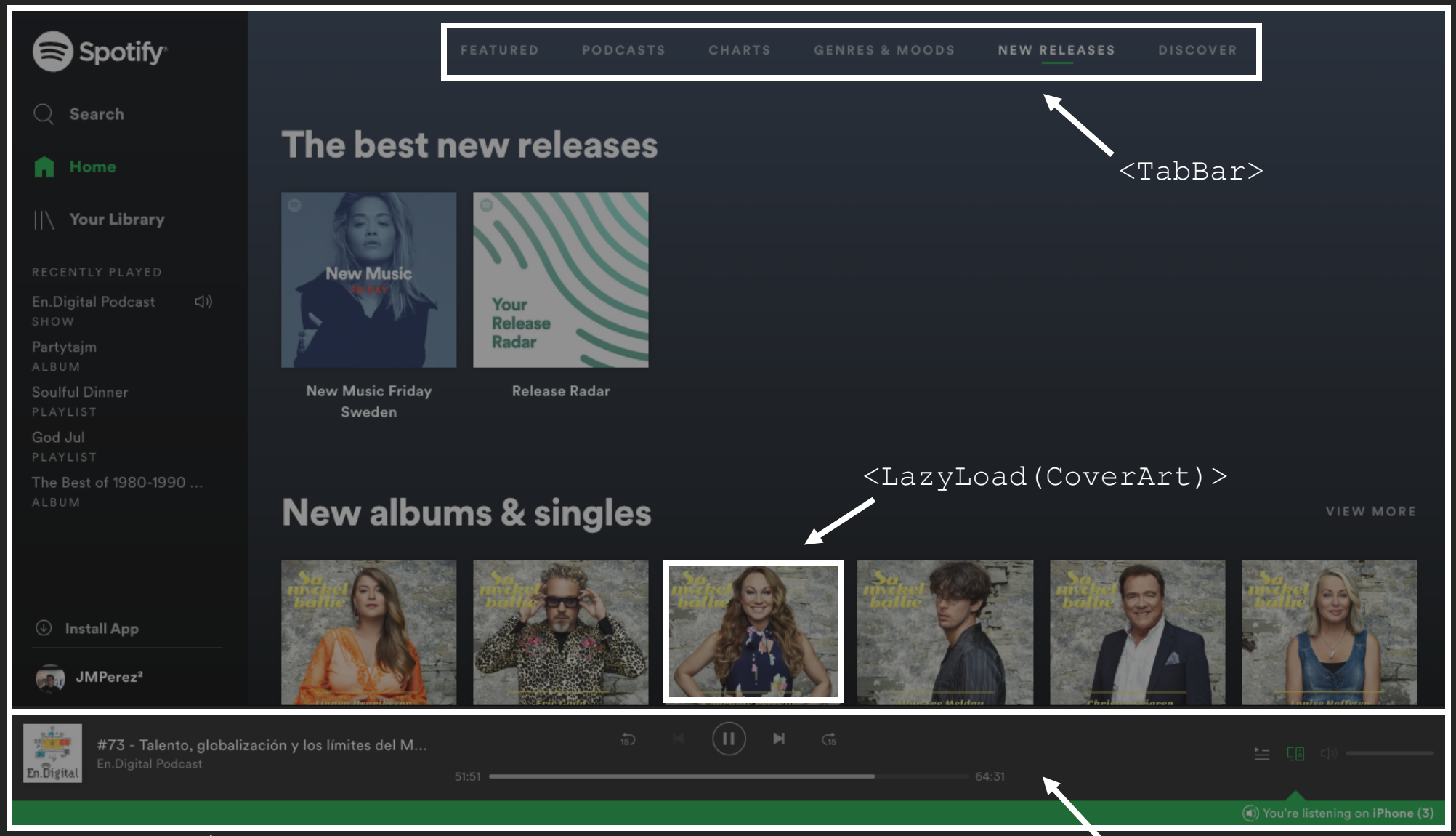
Might not have permissions to install new one

Slow network?

On a plane, subway, public wifi, limited data plan...

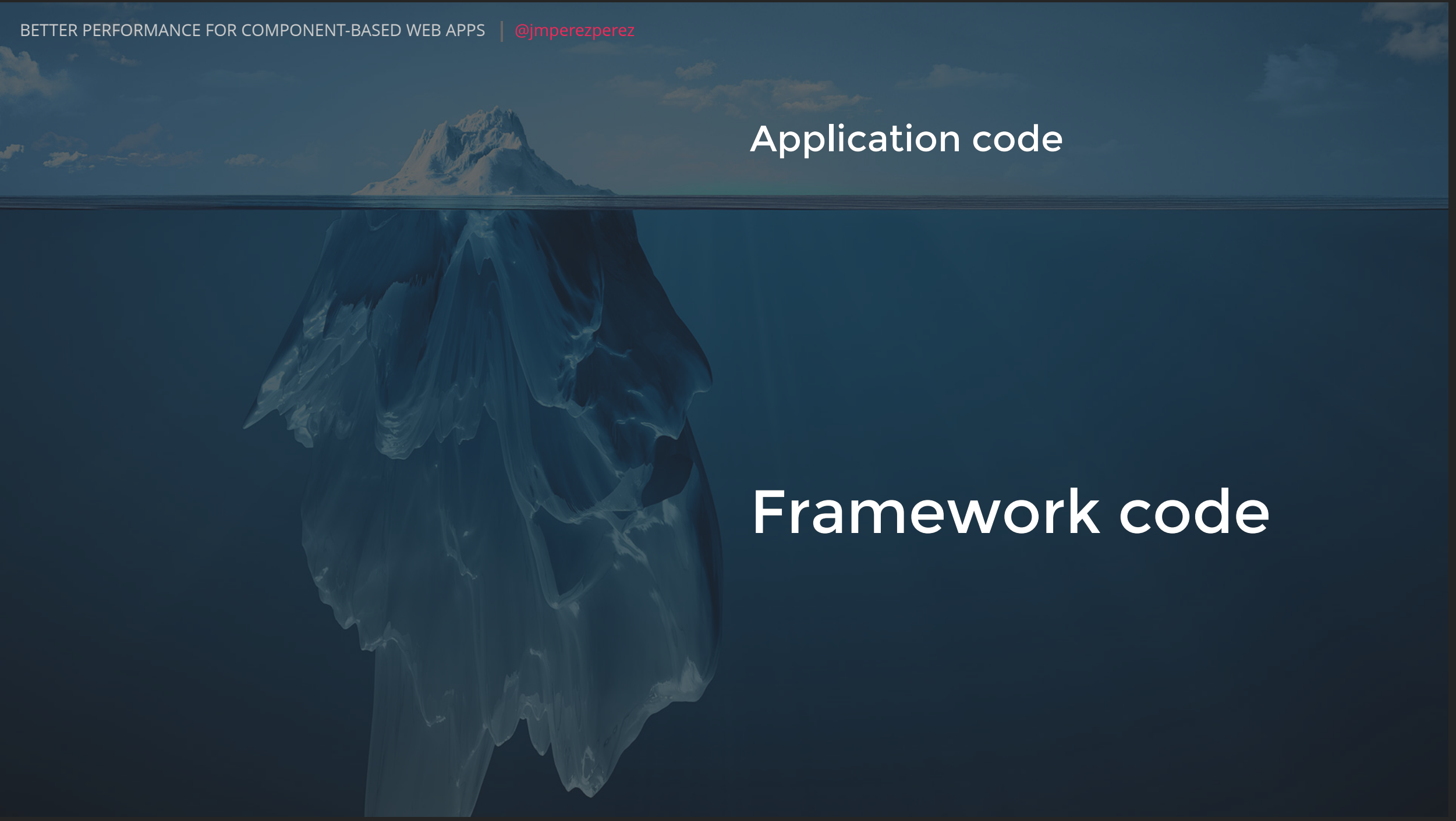

Welcome to the era
of <components />



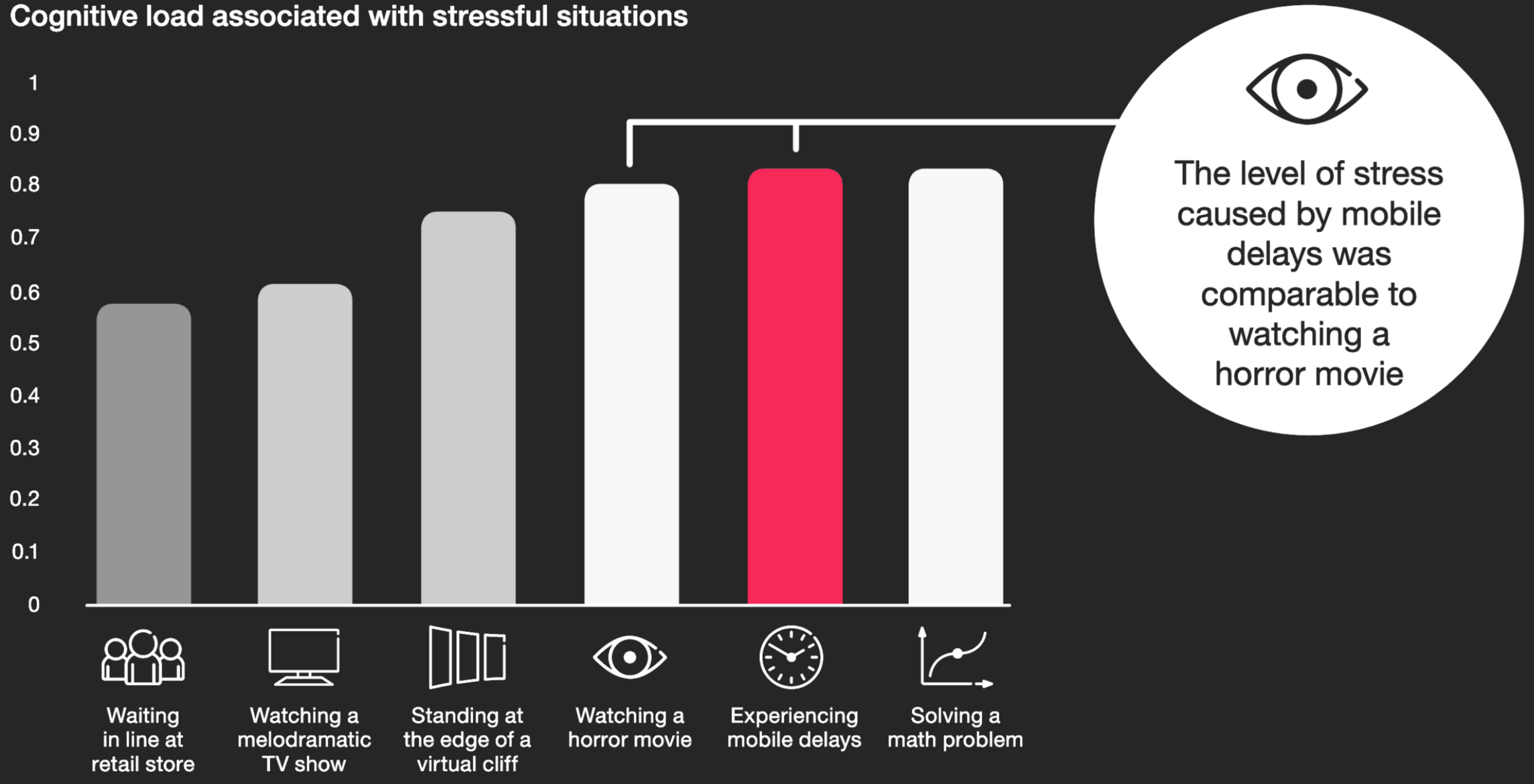

Spotify
Search
Home
Your Library
RECENTLY PLAYED
En.Digital Podcast
SHOW
Partytajm
ALBUM
Soulful Dinner
PLAYLIST
God Jul
PLAYLIST
The Best of 1980-1990 ...
ALBUM
Install App
JMPerez²
FEATURED
PODCASTS
CHARTS
GENRES & MOODS
NEW RELEASES
DISCOVER
<TabBar>
The best new releases
New Music
FRIDAY
Your Release Radar
New Music Friday Sweden
Release Radar
<LazyLoad(CoverArt)>
New albums & singles
VIEW MORE
#73 - Talento, globalización y los límites del M...
En.Digital Podcast
51:51
64:31
You're listening on iPhone (3)
<Router>
<Connect(NowPlayingBar)>

Serving a large bundle in the old days

```
<html>
<head>
    <script src="bundle.js"></script>
</head>
<body>
</body>
</html>
```


Application code
Framework code

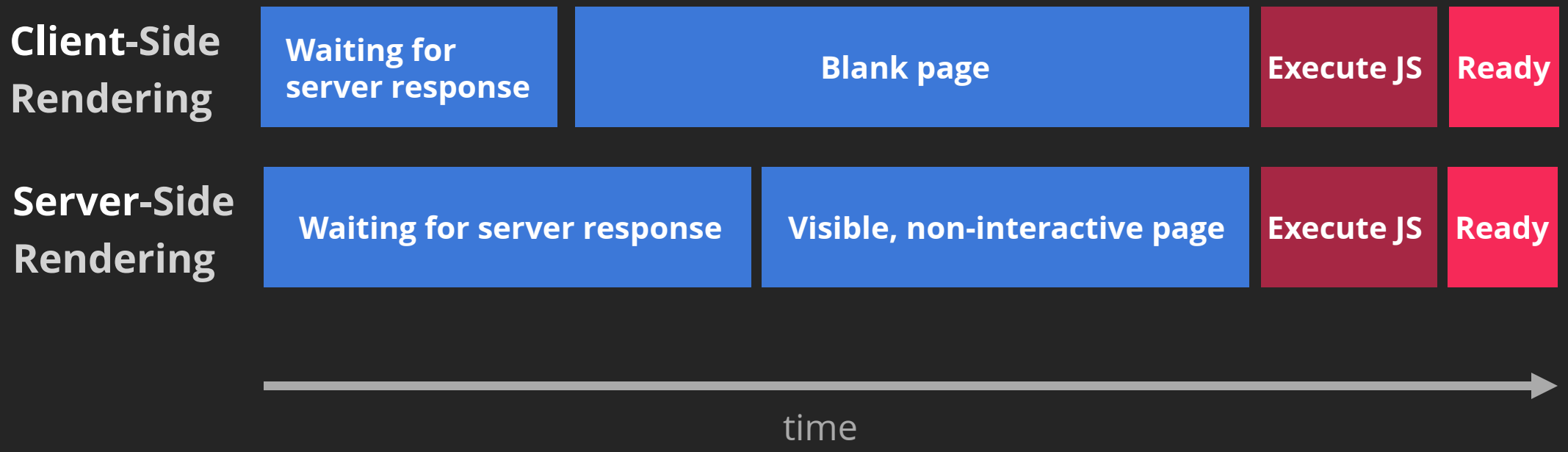
Cognitive load associated with stressful situations



Source: Ericsson ConsumerLab, Neurons Inc., 2015

Server-Side Rendering a Slow App

Server-Side Rendering Trade-off



Solution

Serve to the user
just what is needed

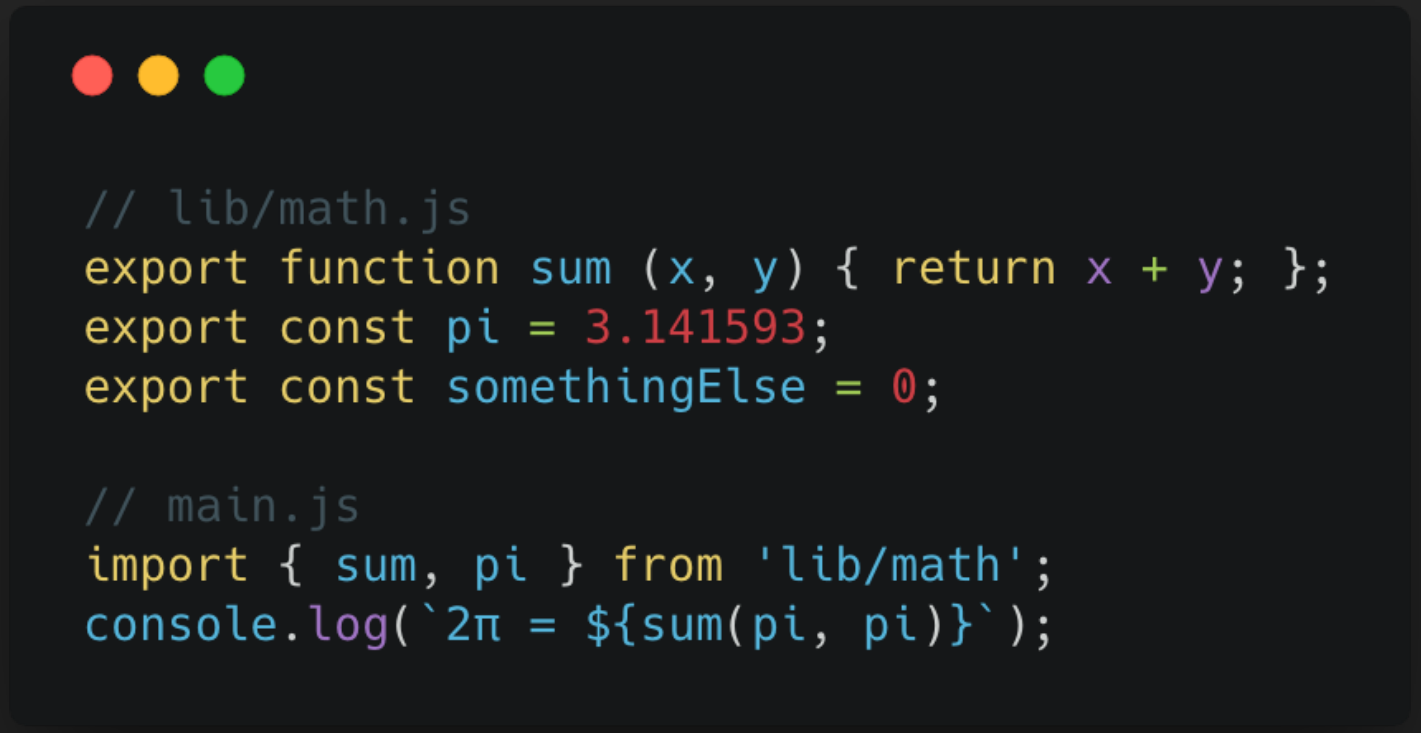
How we used to ensure dependencies

```
<html>
<head>
    <!-- you can imagine a few CSS requests here -->
</head>
<body>
    <!-- some content -->
    <script src="https://code.jquery.com/jquery-1.12.4.js"></script>
    <script src="https://code.jquery.com/ui/1.12.1/jquery-ui.js"></script>
    <script src="https://maps.google.com/maps/api/js"></script>
    <script src="main.js"></script>
</body>
</html>
```

We didn't have a way* to define dependencies

* With the exception of YUI Loader, Require.JS and custom tools

ES6 - import/export



```
// lib/math.js
export function sum (x, y) { return x + y; };
export const pi = 3.141593;
export const somethingElse = 0;

// main.js
import { sum, pi } from 'lib/math';
console.log(`2π = ${sum(pi, pi)}`);
```

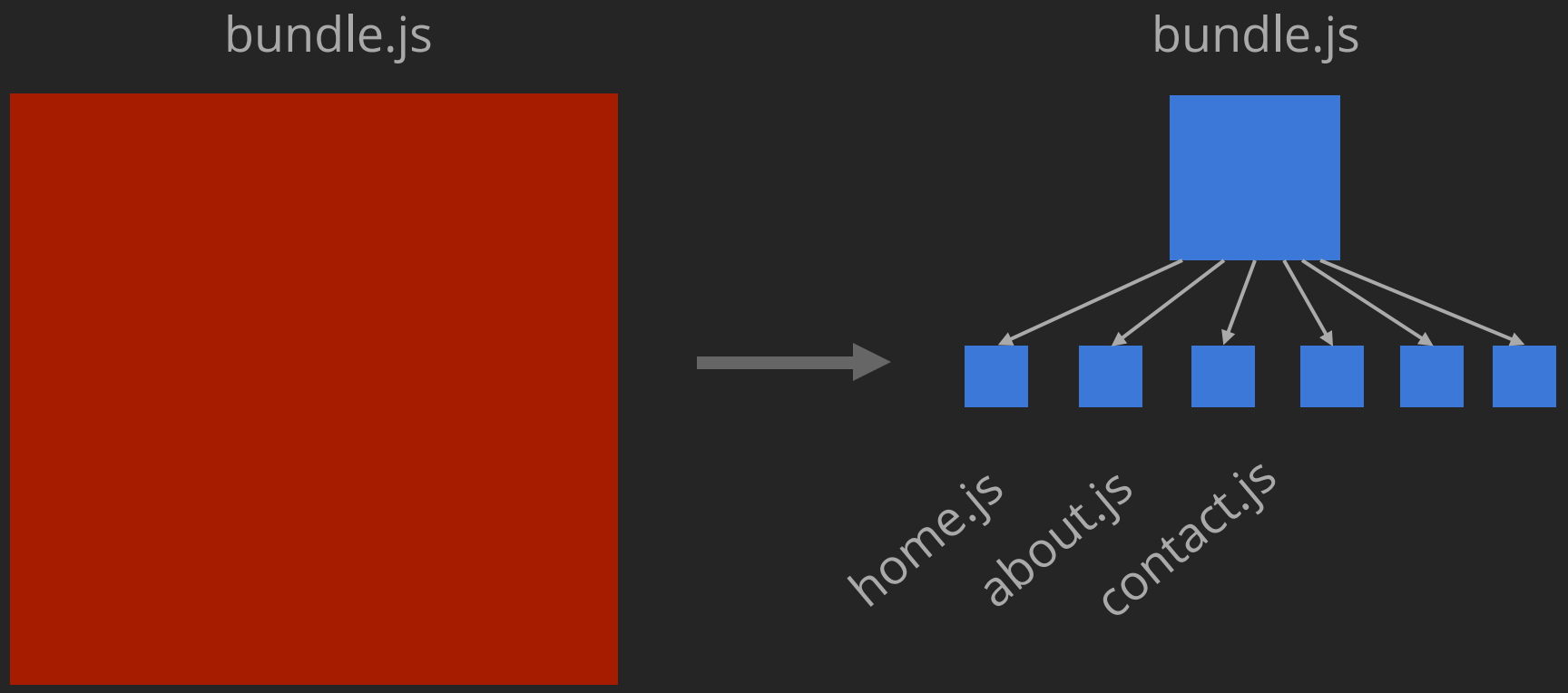
Modelling a web site has pages as dependencies

```
// my website
import home from 'paths/home';
import about from 'paths/about';
import contact from 'paths/contact';

// render current path
// ...
```

Dynamic Loading

```
// my website
switch (path) {
  case '/':
    import('paths/home').then(module => /* render it */);
    break;

  case '/about':
    import('paths/about').then(module => /* render it */);
    break;

  case '/contact':
    import('paths/contact').then(module => /* render it */);
    break;
}
```

Code Splitting at Path Level



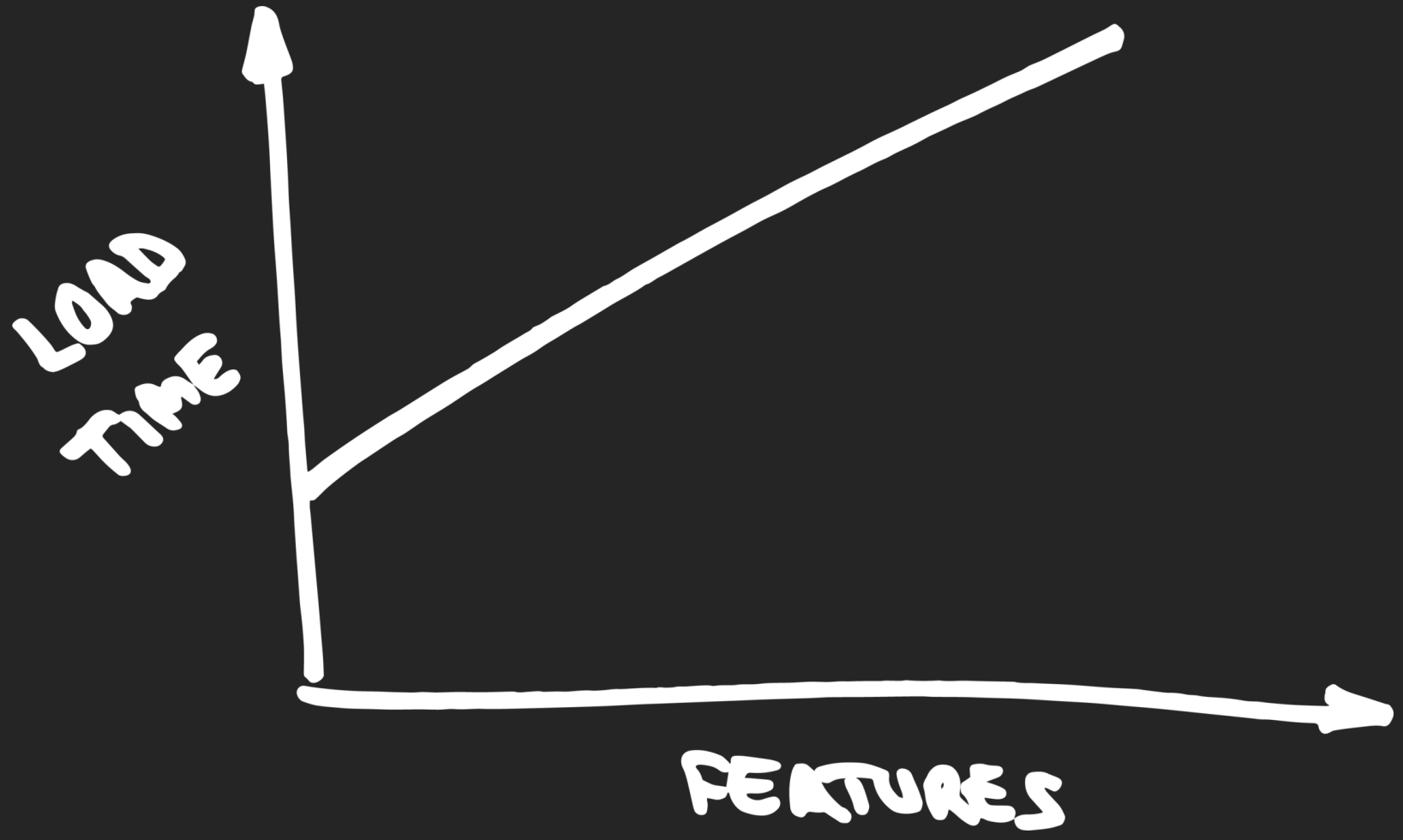
THIS IS GREAT

Serve the code for the current path

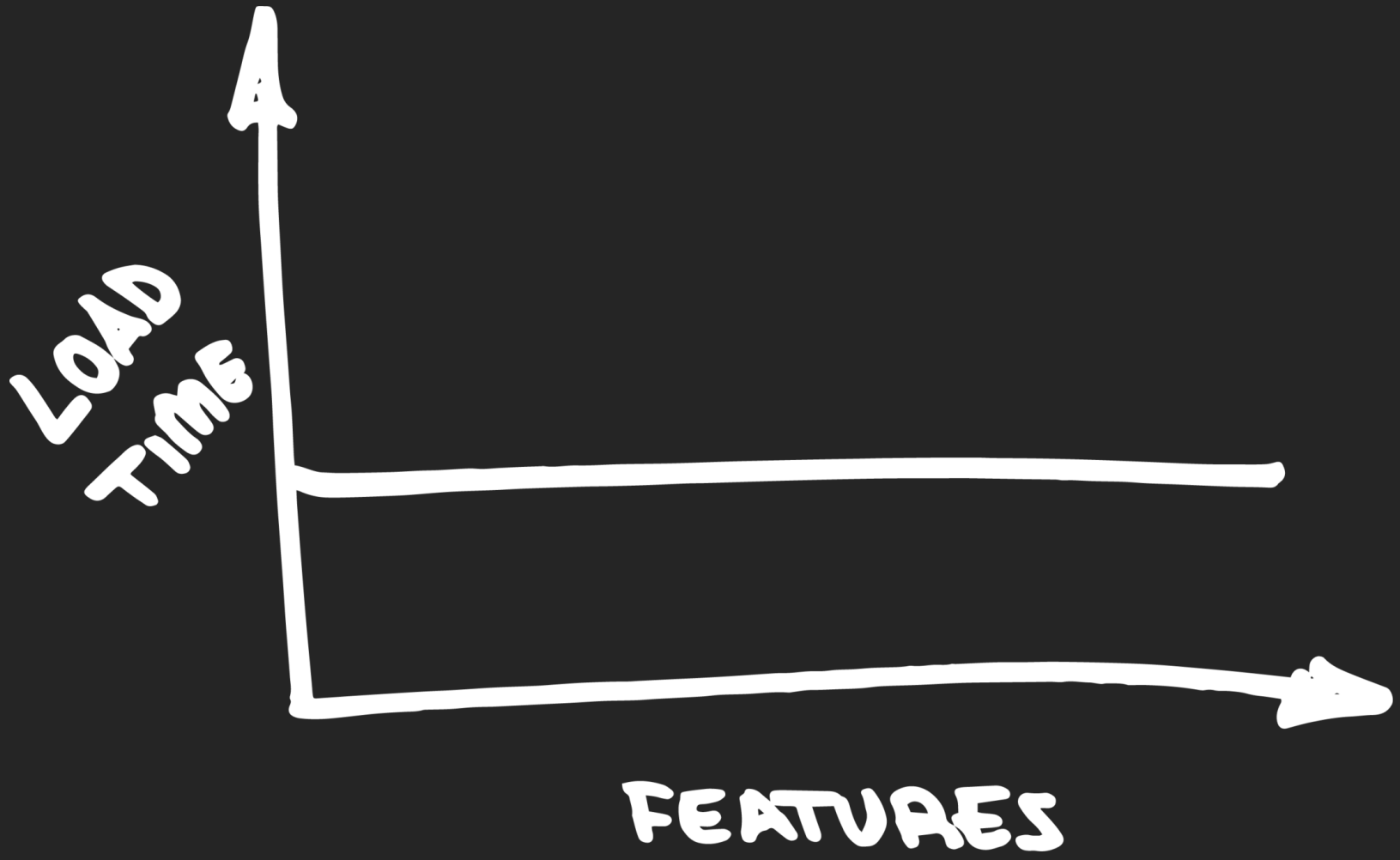
More importantly

Adding features has no cost in payload / rendering time

From this

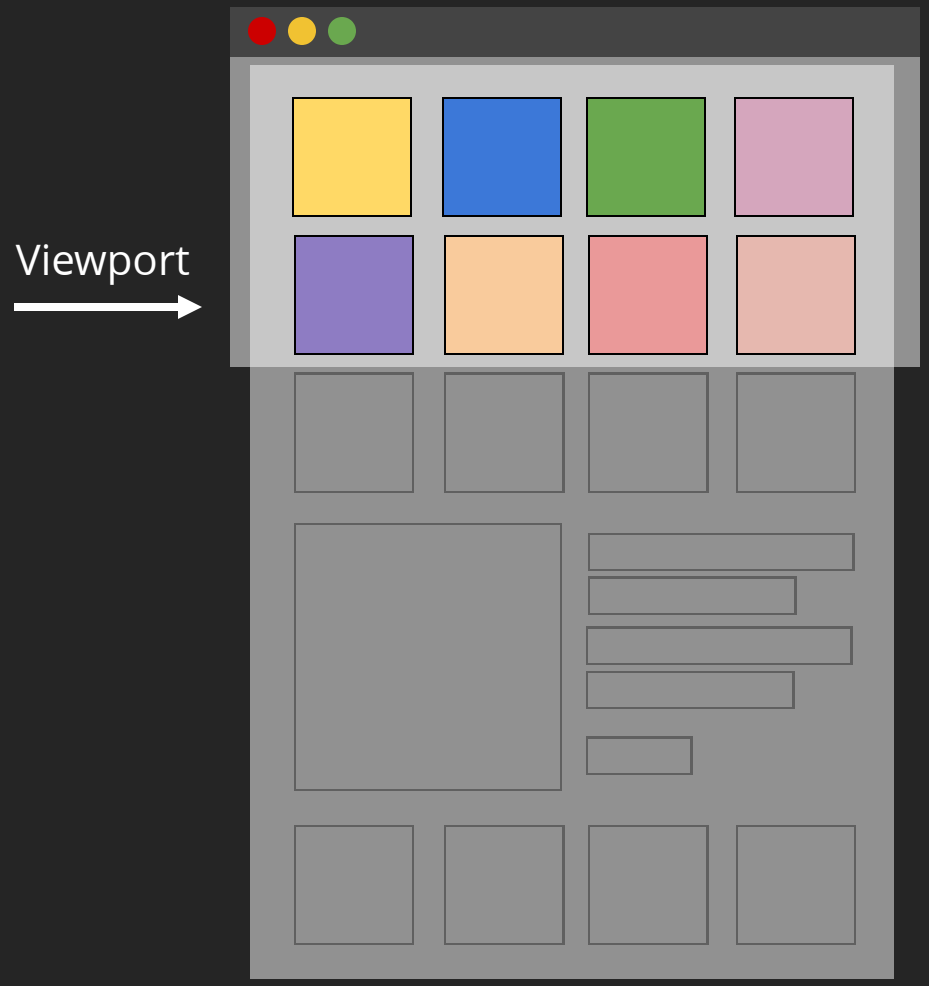


To this



Lazy Loading

- Image
- Text with web font
- Other components



THIS IS EVEN GREATER

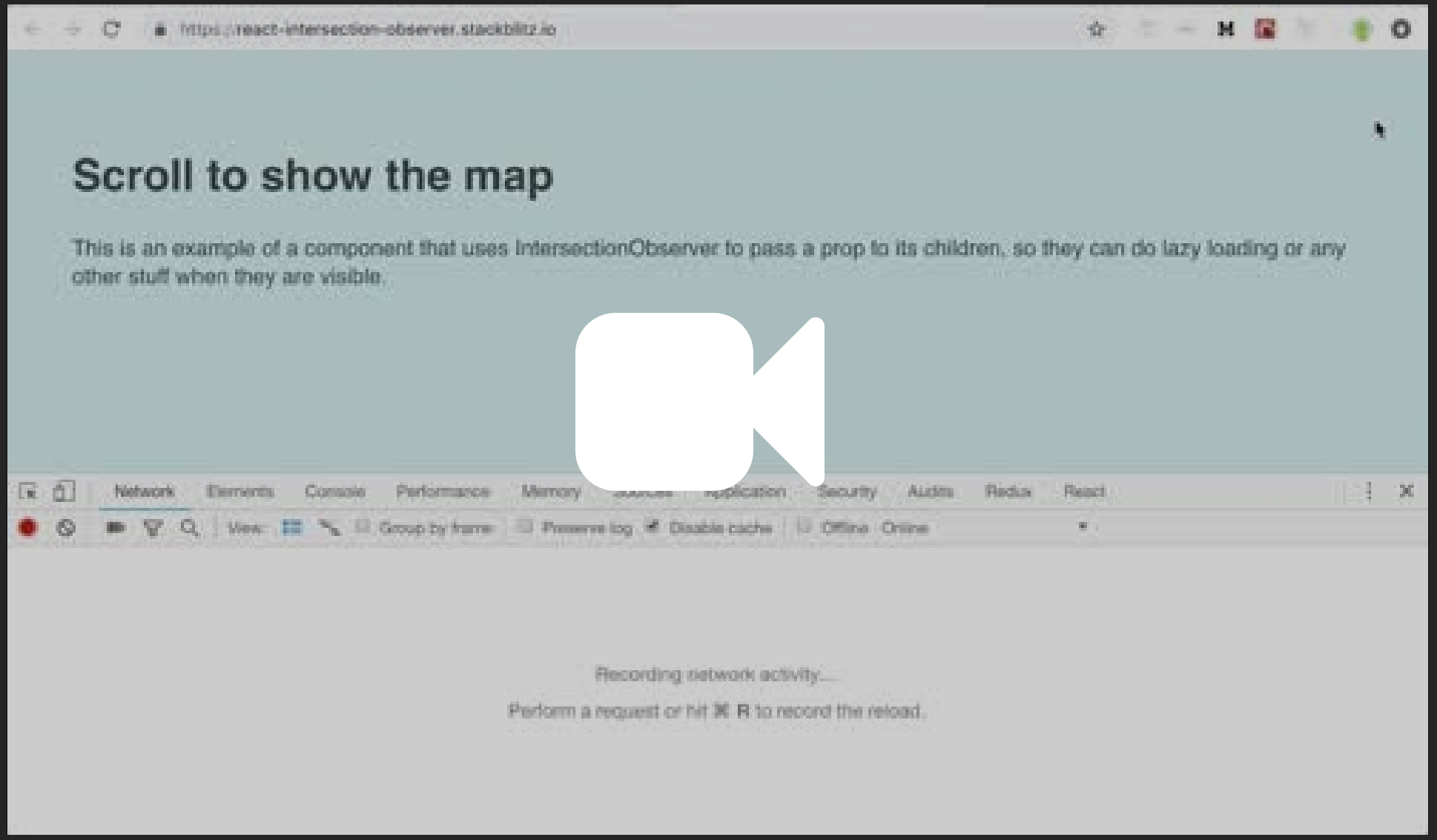
Serve the code for the current path

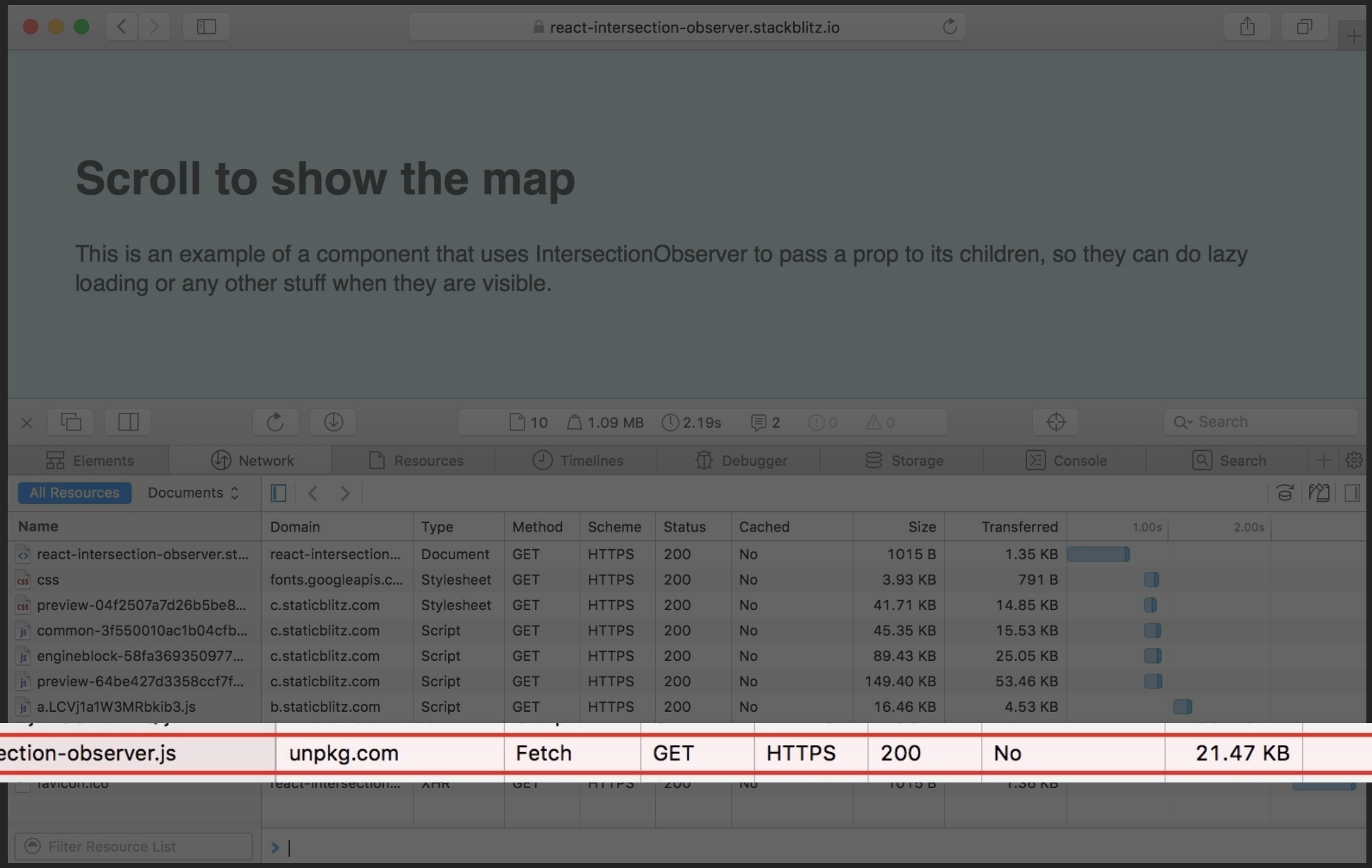
THIS IS EVEN GREATER

Serve the code for the current ~~path~~ screen

Polyfill on-demand

```
class LazyLoader extends Component {
  ...
  componentDidMount() {

    (window.IntersectionObserver
      ? Promise.resolve()                    // supported
      : import('intersection-observer')      // polyfill
    )
    .then(() => {
        new window.IntersectionObserver(entries => {
            // ...
        }, {});
    });
  }
  ...
}
```


https://react-intersection-observer.stackblitz.io
Scroll to show the map
This is an example of a component that uses IntersectionObserver to pass a prop to its children, so they can do lazy loading or any other stuff when they are visible.
Network
Elements
Console
Performance
Memory
Application
Security
Audits
Redux
React
View:
Group by frame
Preserve log
Disable cache
Offline
Online
Recording network activity...
Perform a request or hit ⌘ R to record the reload.


react-intersection-observer.stackblitz.io
Scroll to show the map
This is an example of a component that uses IntersectionObserver to pass a prop to its children, so they can do lazy loading or any other stuff when they are visible.
10 1.09 MB 2.19s 2 0 0
Search
Elements Network Resources Timelines Debugger Storage Console Search
All Resources Documents
Name Domain Type Method Scheme Status Cached Size Transferred 1.00s 2.00s
react-intersection-observer.st... react-intersection... Document GET HTTPS 200 No 1015 B 1.35 KB
css fonts.googleapis.c... Stylesheet GET HTTPS 200 No 3.93 KB 791 B
preview-04f2507a7d26b5be8... c.staticblitz.com Stylesheet GET HTTPS 200 No 41.71 KB 14.85 KB
common-3f550010ac1b04cfb... c.staticblitz.com Script GET HTTPS 200 No 45.35 KB 15.53 KB
engineblock-58fa369350977... c.staticblitz.com Script GET HTTPS 200 No 89.43 KB 25.05 KB
preview-64be427d3358ccf7f... c.staticblitz.com Script GET HTTPS 200 No 149.40 KB 53.46 KB
a.LCVj1a1W3MRbkib3.js b.staticblitz.com Script GET HTTPS 200 No 16.46 KB 4.53 KB
intersection-observer.js unpkg.com Fetch GET HTTPS 200 No 21.47 KB 6.41 KB
Filter Resource List

THIS IS EVEN MORE GREATER

Serve the code for the current screen

THIS IS EVEN MORE GREATER

Serve the code for the current screen and browser

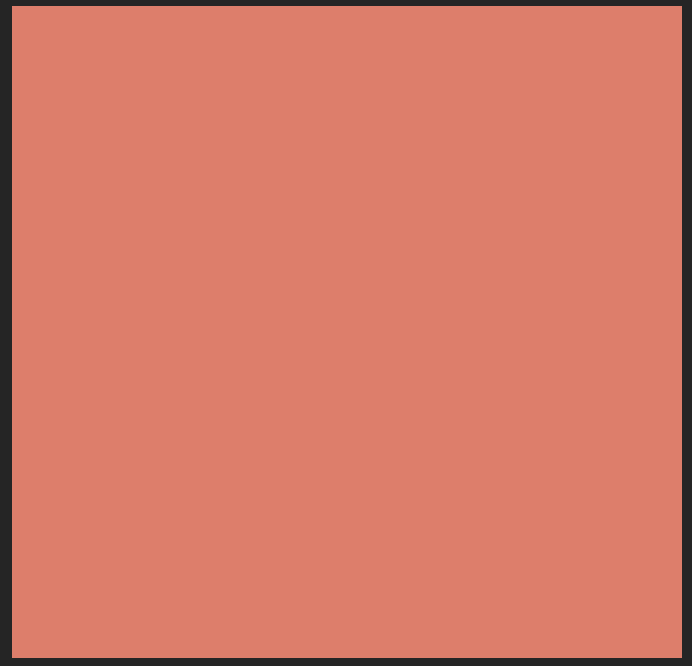
CSS-in-JS

Breaking down the styles monolith

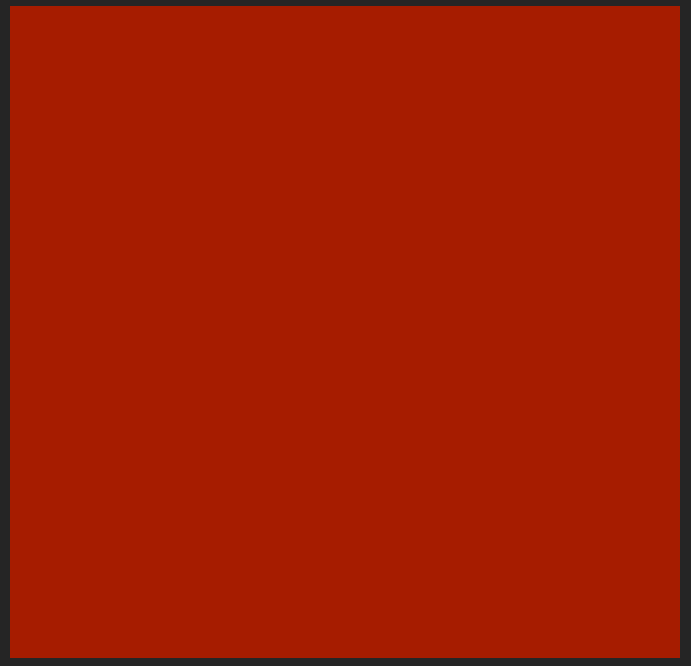
```
// components/modal
import { styled } from 'pick-your-css-in-js-library-of-choice'

const ModalBox = styled.div`
    background: rgba(0, 0, 0, 0.5);
    position: absolute;
    top: 0;
    left: 0;
    width: 100%;
    height: 100%;
`;

const ModalTitle = styled.h1`
    fontSize: 16px;
`;

export default function Modal() {
    return (
      <ModalBox>
        <ModalTitle>This is a modal box</ModalTitle>
      </ModalBox>
    );
};
```

Before code-splitting

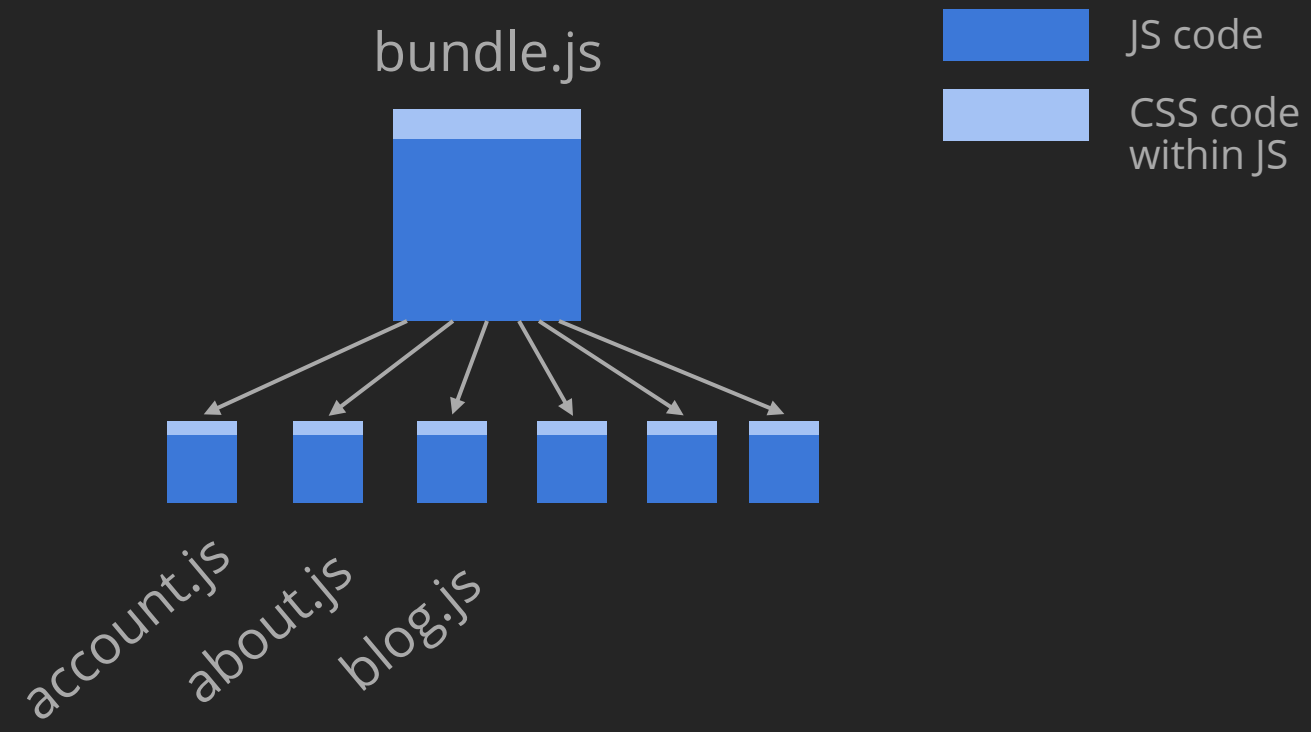
styles.css



bundle.js



Code splitting + CSS-in-JS



THIS IS AMAZING

Serve the code for the current screen and browser

THIS IS AMAZING

~~Serve the code~~ Break the behemoth of **JS** and **CSS** for the current screen and browser

Wrapping up

~~JS fatigue~~

These are tools. Add them to your toolbox.

Look at the bigger picture

Thanks!

@jmperezperez