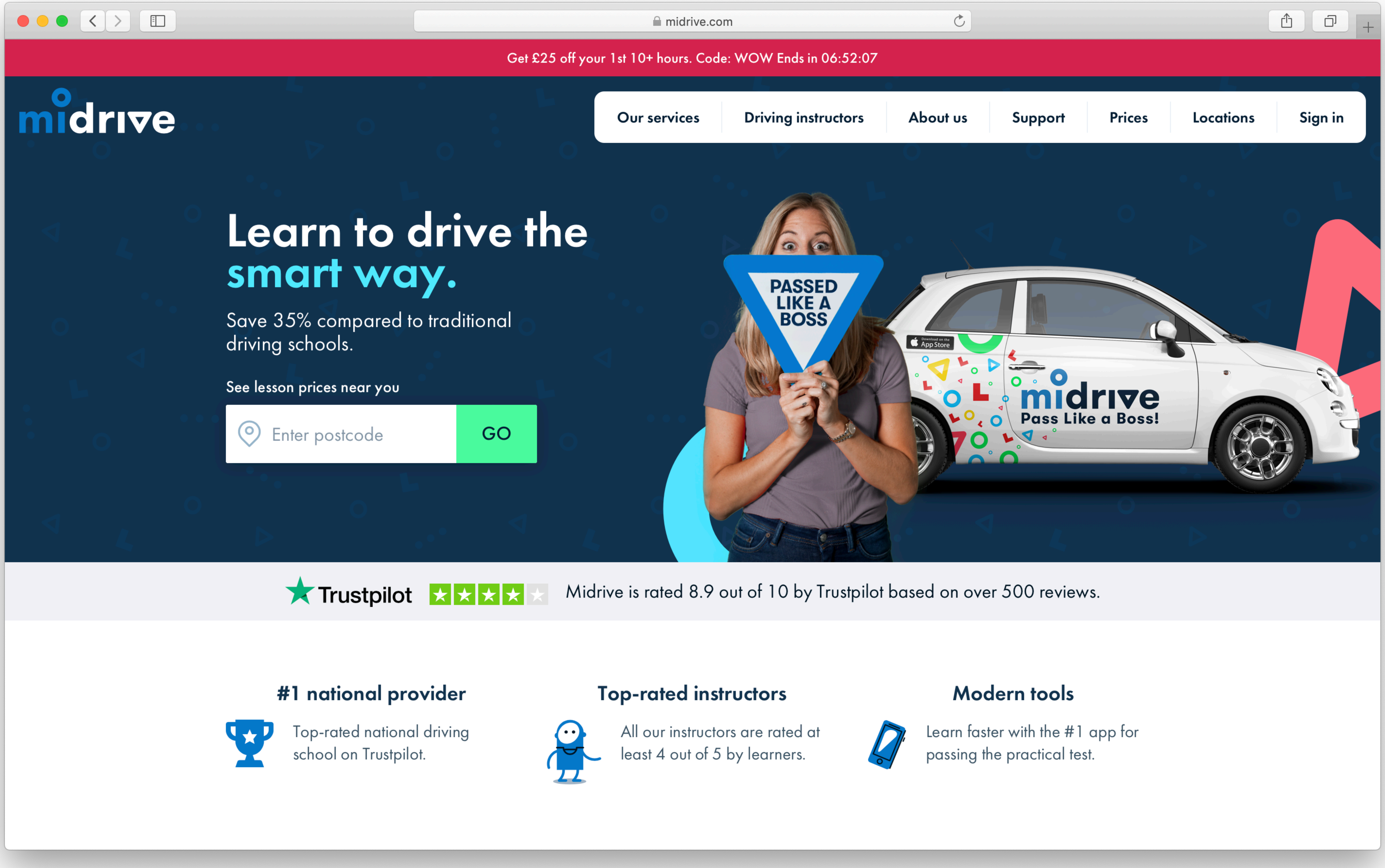
Migrate a React application to server-side with Next.js

Nataliya Karatkova

@meuwka

Based on a true story



Get £25 off your 1st 10+ hours. Code: WOW Ends in 06:52:07

Learn to drive the smart way.

Save 35% compared to traditional driving schools.

See lesson prices near you

Midrive is rated 8.9 out of 10 by Trustpilot based on over 500 reviews.

#1 national provider

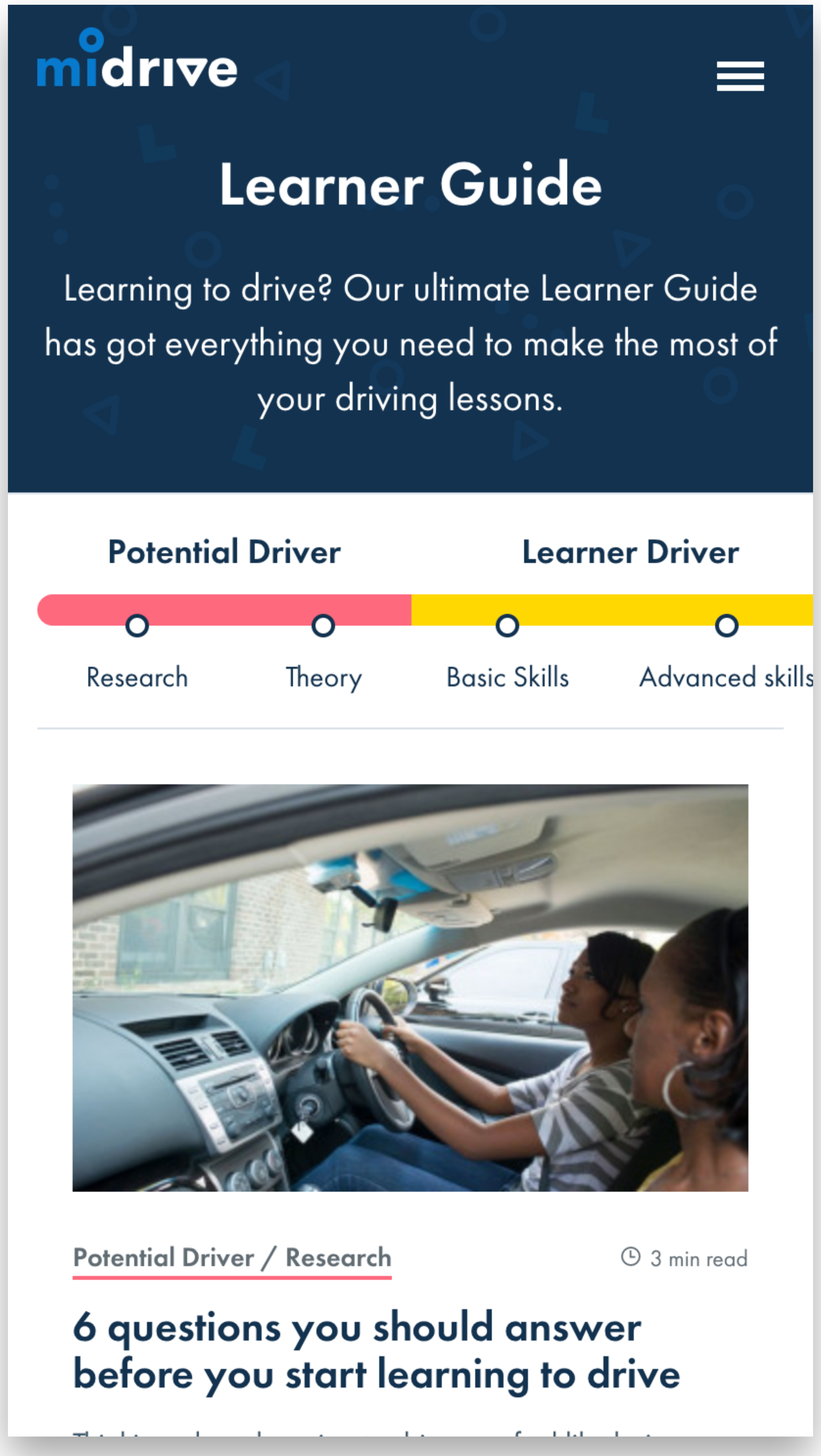
Top-rated national driving school on Trustpilot.

Top-rated instructors

All our instructors are rated at least 4 out of 5 by learners.

Modern tools

Learn faster with the #1 app for passing the practical test.



midrive

Learner Guide

Learning to drive? Our ultimate Learner Guide has got everything you need to make the most of your driving lessons.

Potential Driver | Learner Driver

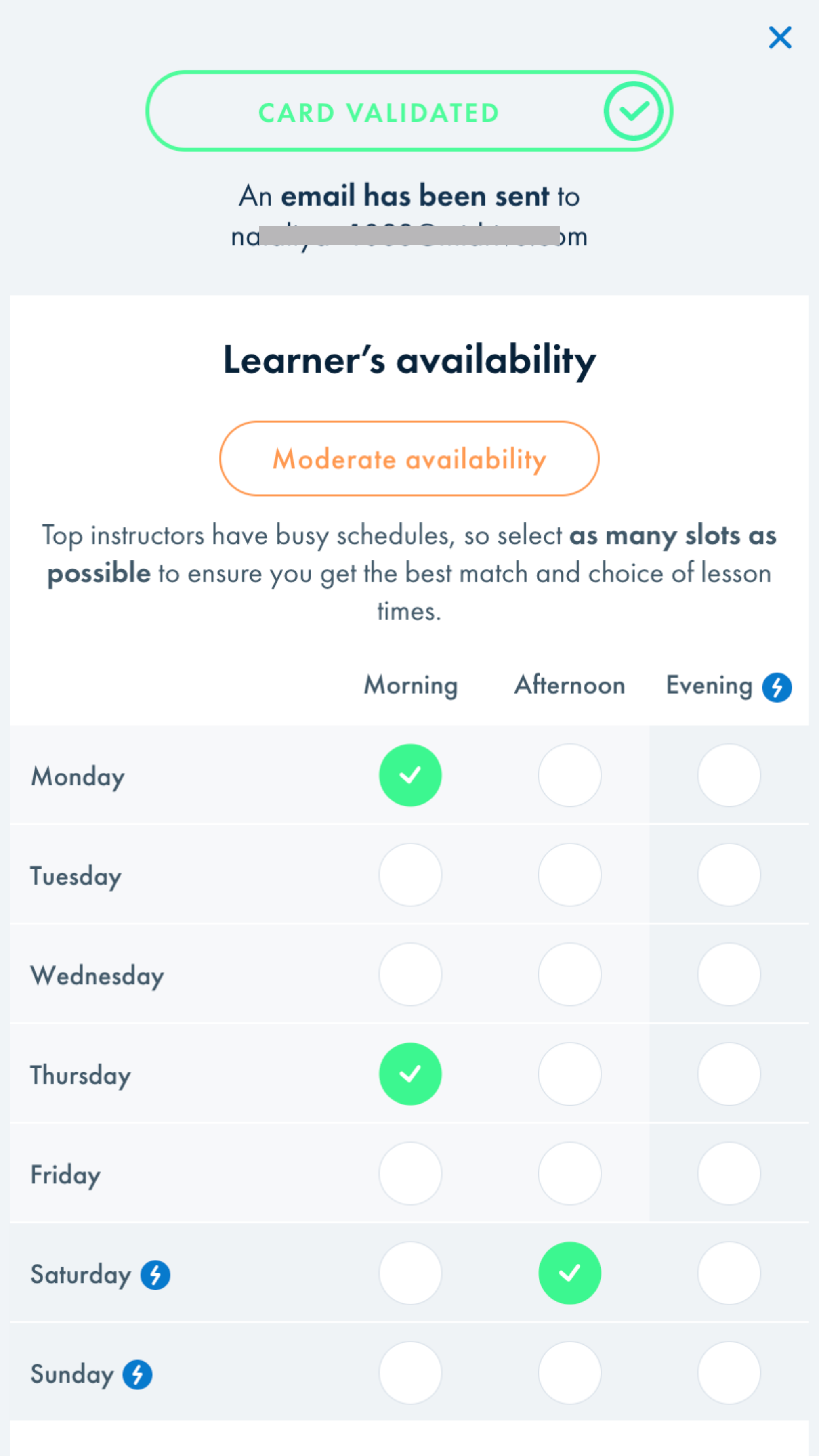
Research · Theory · Basic Skills · Advanced skills

Potential Driver / Research

3 min read

6 questions you should answer before you start learning to drive

Content Headless CMS



CARD VALIDATED

An **email has been sent** to na[redacted]om

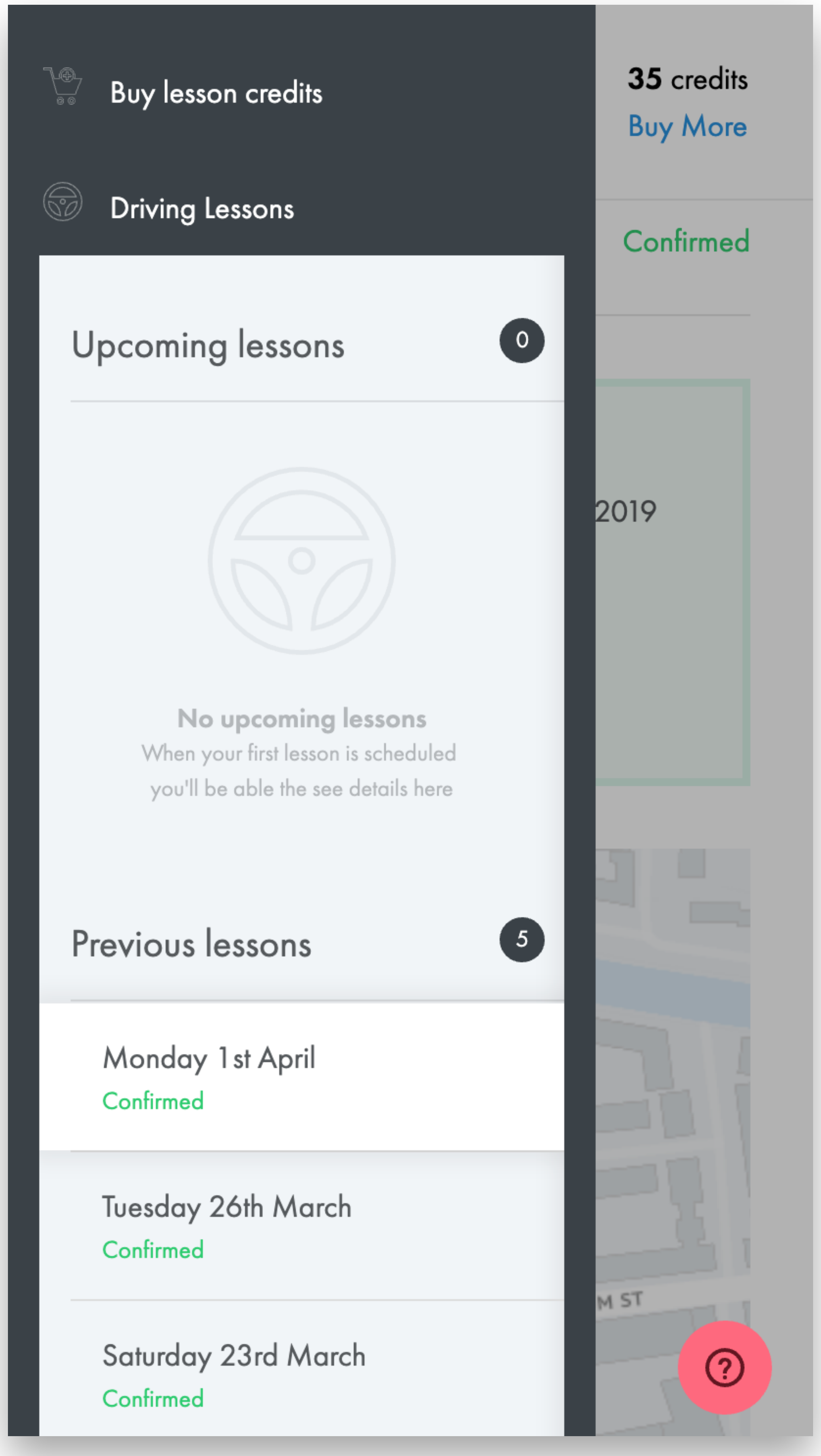
Learner's availability

Moderate availability

Top instructors have busy schedules, so select **as many slots as possible** to ensure you get the best match and choice of lesson times.

	Morning	Afternoon	Evening
Monday	✓	○	○
Tuesday	○	○	○
Wednesday	○	○	○
Thursday	✓	○	○
Friday	○	○	○
Saturday	○	✓	○
Sunday	○	○	○

Checkout



Buy lesson credits

Driving Lessons

35 credits
Buy More

Confirmed

Upcoming lessons 0

No upcoming lessons
When your first lesson is scheduled you'll be able the see details here

2019

Previous lessons 5

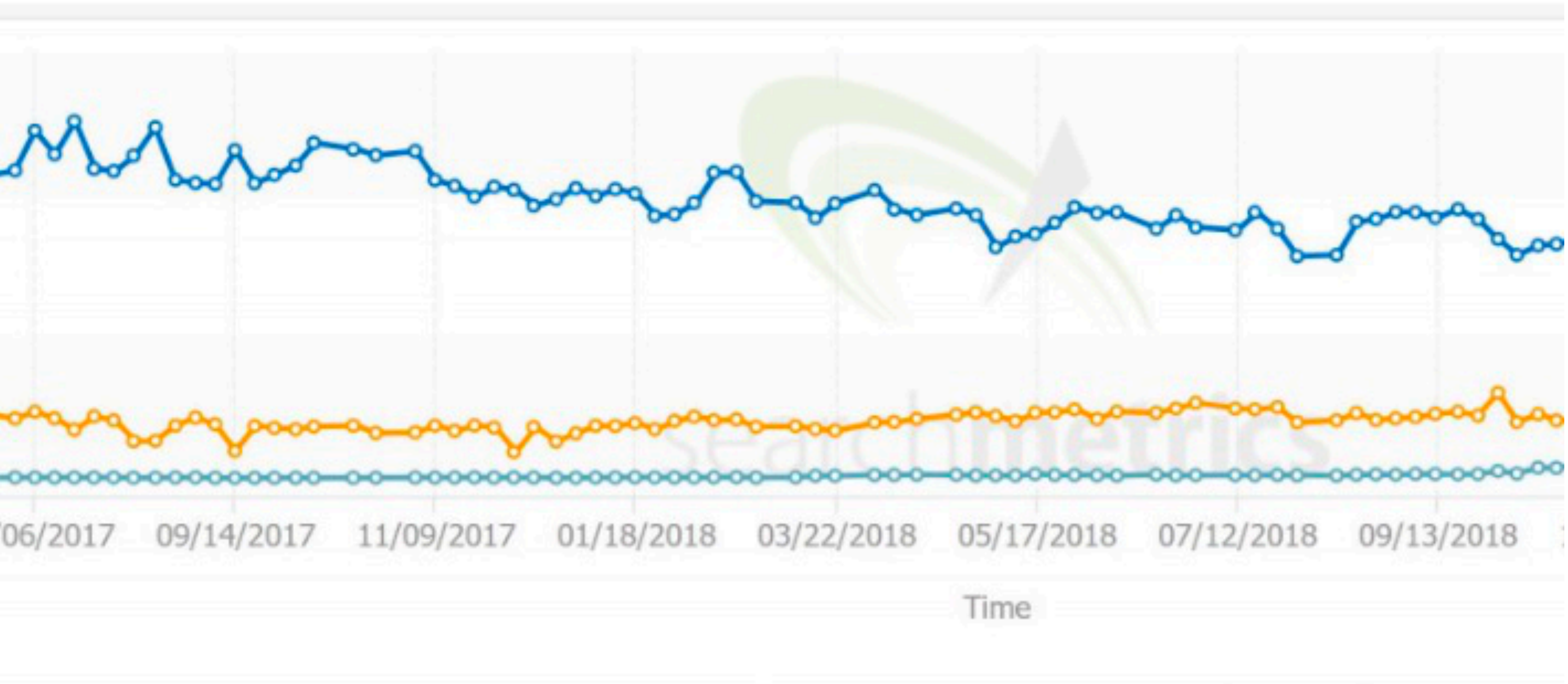
Monday 1st April
Confirmed

Tuesday 26th March
Confirmed

Saturday 23rd March
Confirmed

Dashboard

Before
(2018)

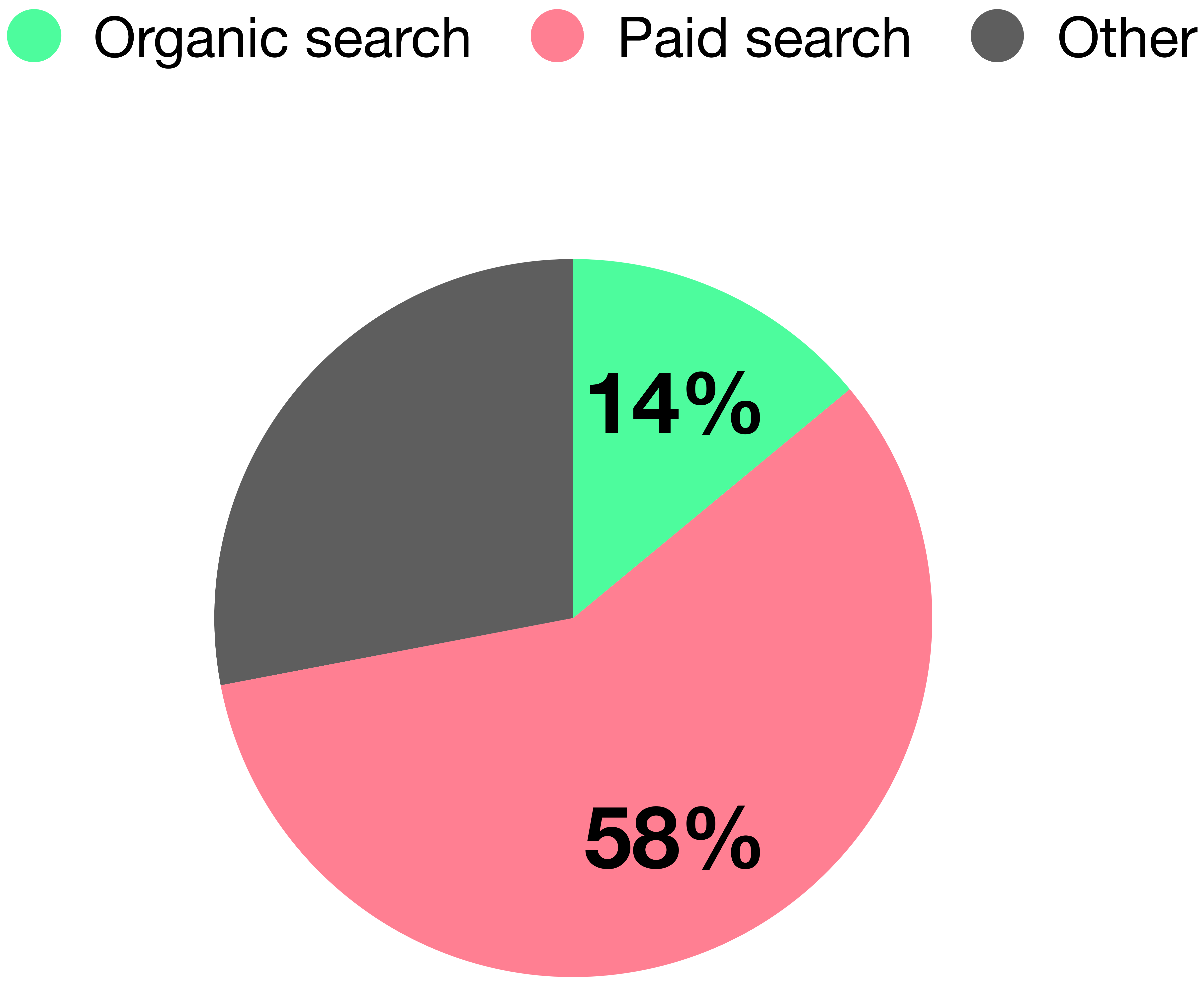


RED

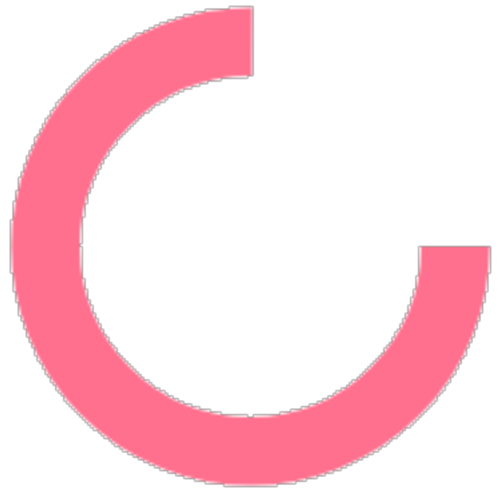
AA

Midrive

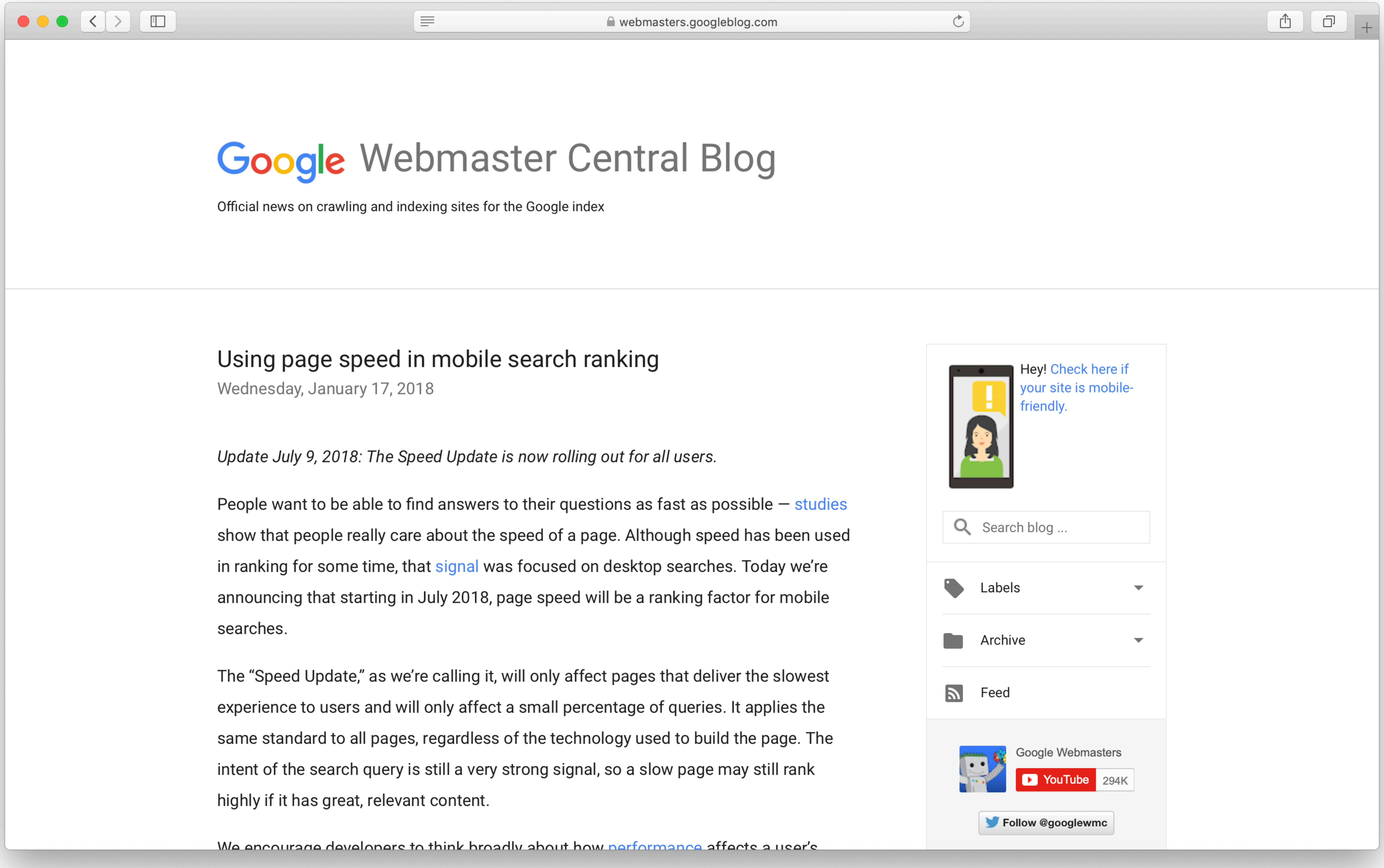
SEO Visibility



Channels



and moreover



Google Webmaster Central Blog

Official news on crawling and indexing sites for the Google index

Using page speed in mobile search ranking

Wednesday, January 17, 2018

Update July 9, 2018: The Speed Update is now rolling out for all users.

People want to be able to find answers to their questions as fast as possible — studies show that people really care about the speed of a page. Although speed has been used in ranking for some time, that signal was focused on desktop searches. Today we're announcing that starting in July 2018, page speed will be a ranking factor for mobile searches.

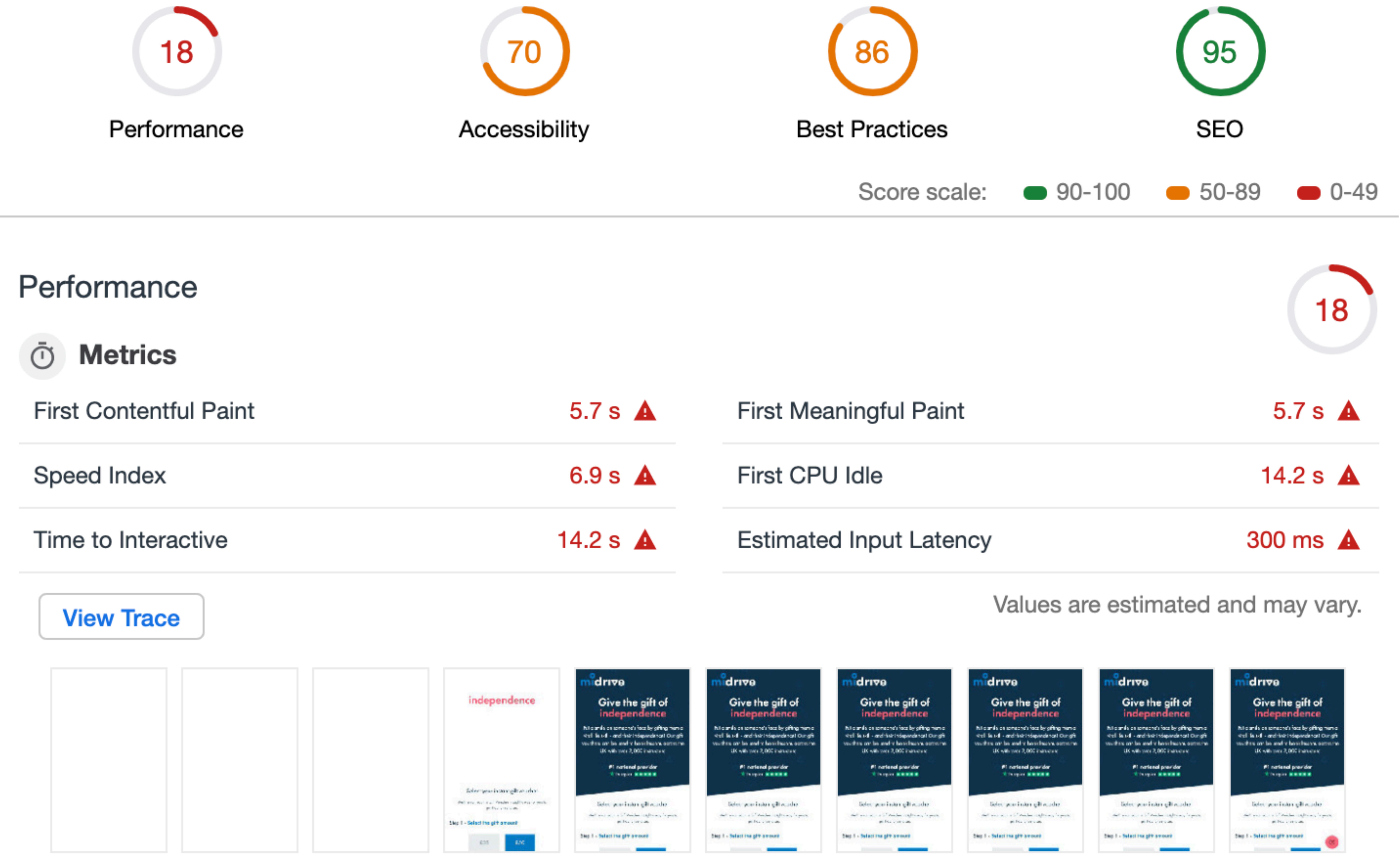
The "Speed Update," as we're calling it, will only affect pages that deliver the slowest experience to users and will only affect a small percentage of queries. It applies the same standard to all pages, regardless of the technology used to build the page. The intent of the search query is still a very strong signal, so a slow page may still rank highly if it has great, relevant content.

We encourage developers to think broadly about how performance affects a user's

Hey! Check here if your site is mobile-friendly.

https://webmasters.googleblog.com/2018/01/using-page-speed-in-mobile-search.html

3G



18 Performance

70 Accessibility

86 Best Practices

95 SEO

Score scale: 🟩 90-100 🟧 50-89 🟥 0-49

Performance

18

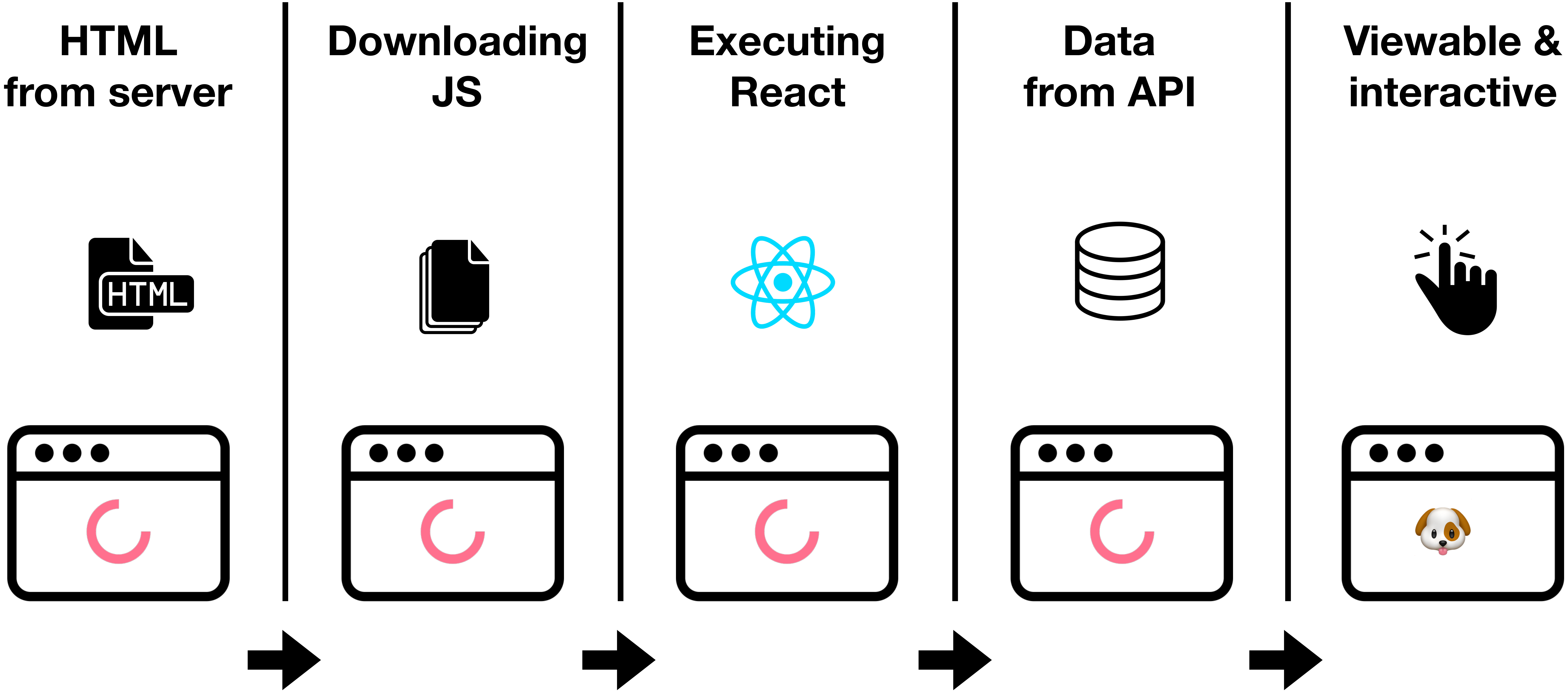
Metrics

First Contentful Paint	5.7 s ▲	First Meaningful Paint	5.7 s ▲
Speed Index	6.9 s ▲	First CPU Idle	14.2 s ▲
Time to Interactive	14.2 s ▲	Estimated Input Latency	300 ms ▲

View Trace

Values are estimated and may vary.

React CSR



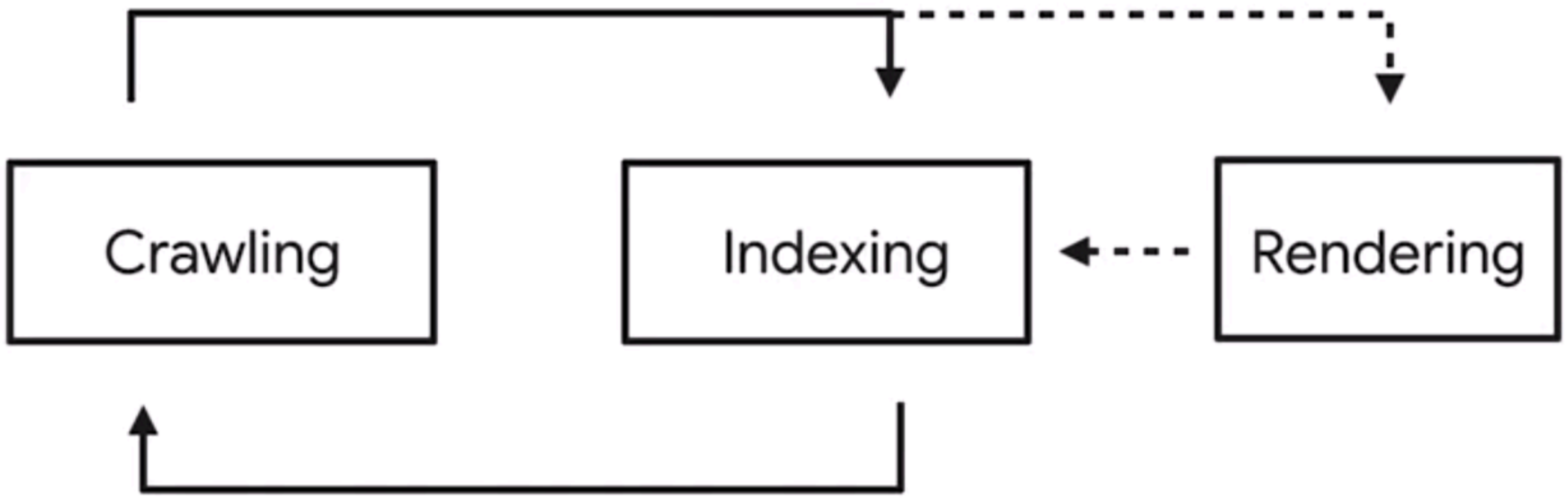
HTML from server

Downloading JS

Executing React

Data from API

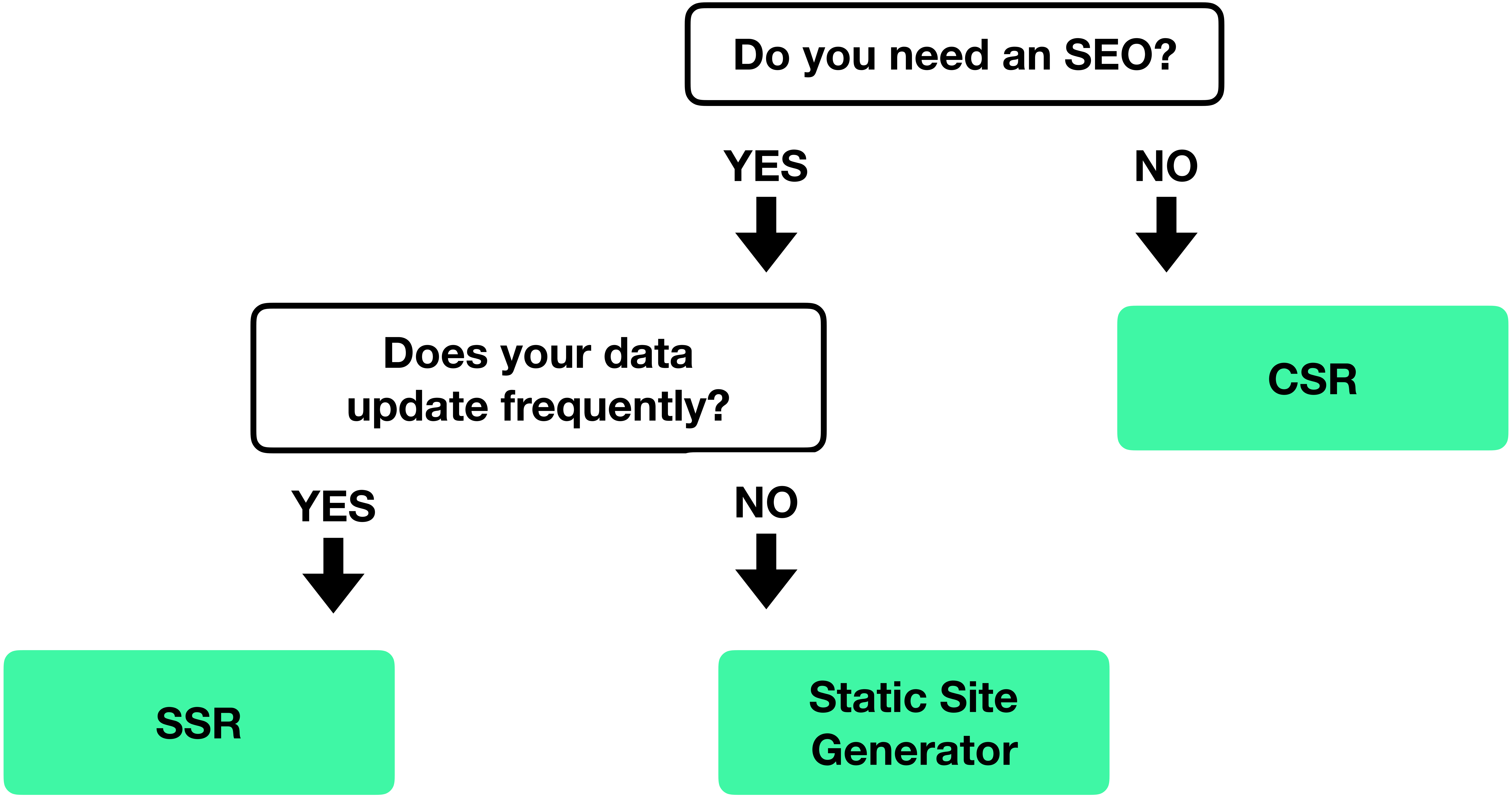
Viewable & interactive



How Google Search indexes JS sites

https://youtu.be/LXF8bM4g-J4

DX + UX + SEO = ?



Do you need an SEO?

YES

NO

Does your data update frequently?

CSR

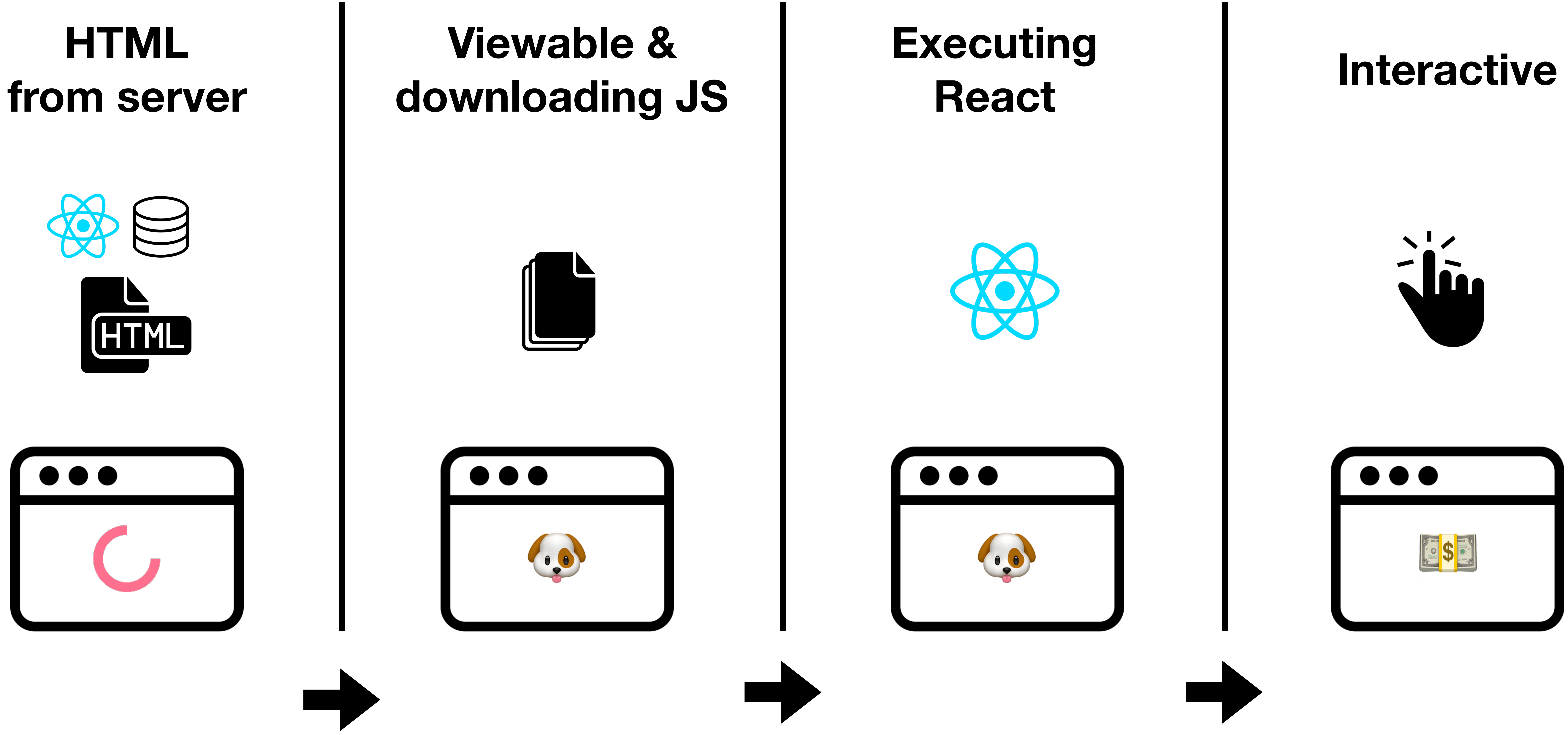
YES

NO

SSR

Static Site Generator

React SSR



HTML from server

Viewable & downloading JS

Executing React

Interactive

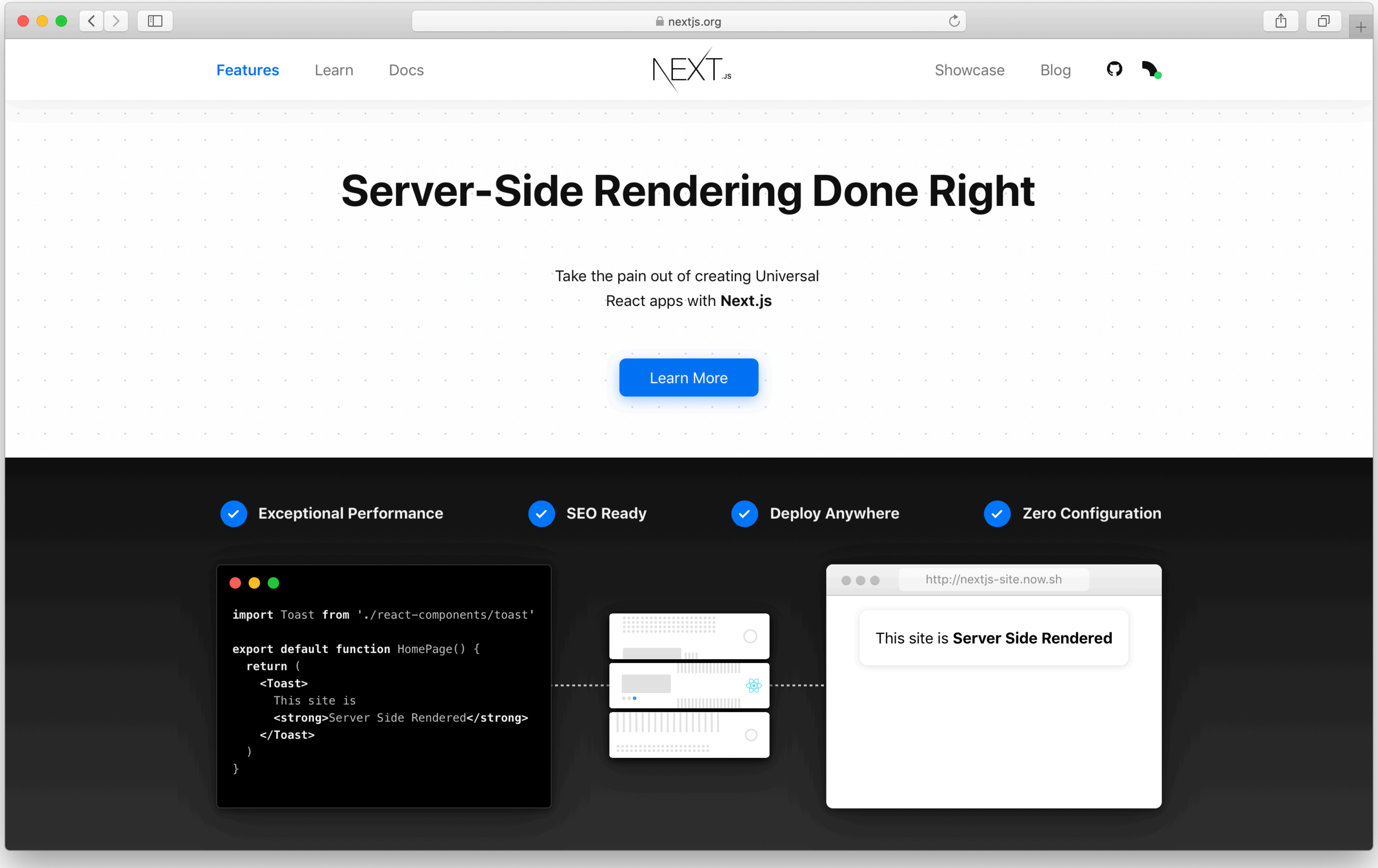
SSR 🔥

❌ SSR is hard enough

❌ High cost of rendering

❌ SSR is hard

Next.js



Server-Side Rendering Done Right

Take the pain out of creating Universal
React apps with **Next.js**

- ✓ **Exceptional Performance**
- ✓ **SEO Ready**
- ✓ **Deploy Anywhere**
- ✓ **Zero Configuration**

```
import Toast from './react-components/toast'

export default function HomePage() {
  return (
    <Toast>
      This site is
      <strong>Server Side Rendered</strong>
    </Toast>
  )
}
```

This site is **Server Side Rendered**

Starter kit

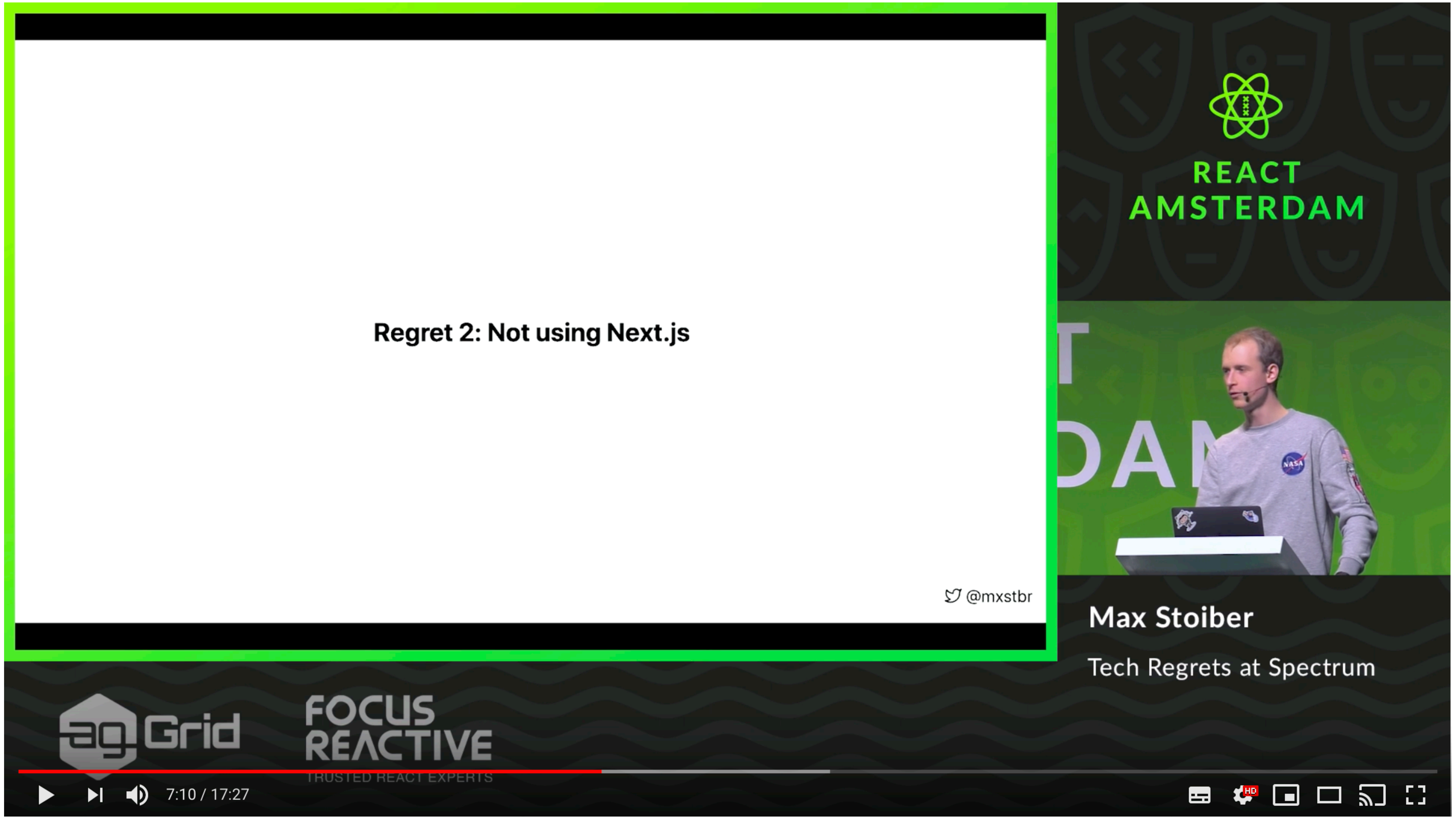
- **194+ examples** https://github.com/zeit/next.js/tree/canary/examples/
- **create-next-app** https://open.segment.com/create-next-app/

Demo 1

- Router, prefetch, code splitting
- Data fetching with `getInitialProps`

❌ SSR is hard

✅ Next.js



Regret 2: Not using Next.js

@mxstbr

Max Stoiber

Tech Regrets at Spectrum

https://youtu.be/UC-bUkbuvZs

Migration

Option 1: Proxying

Option 2: Moving from CRA and React Router to Next

https://spectrum.chat/next-js/general/moving-from-cra-and-react-router-to-next~01a66b8e-496d-47a5-8cf3-8bfb2138289e

```
const proxy = require("http-proxy-middleware");

const pageProxy = proxy(checkIfLegacyRoute, {
  target: LEGACY_URL,
  changeOrigin: true
});

const server = express();

server.use(pageProxy);
```

Proxying

Dynamic routes

```
server.get(“/example/:id", (req, res) => {
    return app.render(req, res, "/example", { id: req.params.id });
});
```

Custom server

```
static async getInitialProps({ query }) {
  const response = await fetch(
    `http://jsonplaceholder.typicode.com/posts/${query.id}`
  );
  const example = await response.json();

  return { example };
}
```

Page

Non SSR components (window is not defined)

```
import dynamic from 'next/dynamic';
const ReactJson = dynamic(
  () => import('react-json-view'),
  { ssr: false }
);

. . .

<ReactJson src={data} />
```

Dynamic Import

Authentication

```
static async getInitialProps({ req, res, store, query }) {
  if (req) {
    store.dispatch(setToken(req));
  }
}
```

page

```
export const setToken = req => async dispatch => {
  const authToken = getCookie("authToken", req);

  ...
```

redux/actions

```
try {
  const payload = await accountApi.setToken(authToken);

  return dispatch({
      type: actionTypes.AUTHORIZED,
      payload
  });
}
catch (err) {
  return dispatch({
    type: actionTypes.NOT_AUTHORIZED
  });
}
```

redux/actions

```
import jsCookie from "js-cookie";

export const getCookie = (name, req) => {
  const isServer = req;

  if (isServer) return getCookieServerSide(name, req);
  return jsCookie.get(name);
};
```

services/cookies

```
import httpCookie from “cookie”;

const getCookieServerSide = (name, req) => {
  const { cookie } = req.headers;
  const parsedCookie = httpCookie.parse(cookie || "");

  return parsedCookie[name];
};
```

services/cookies

```
const payload = await accountApi.login(data);

setCookie("authToken", payload.authToken);
```

login

github.com/zeit/next.js/tree/canary/examples/with-cookie-auth

Cookie-based authentication

✅ Next.js

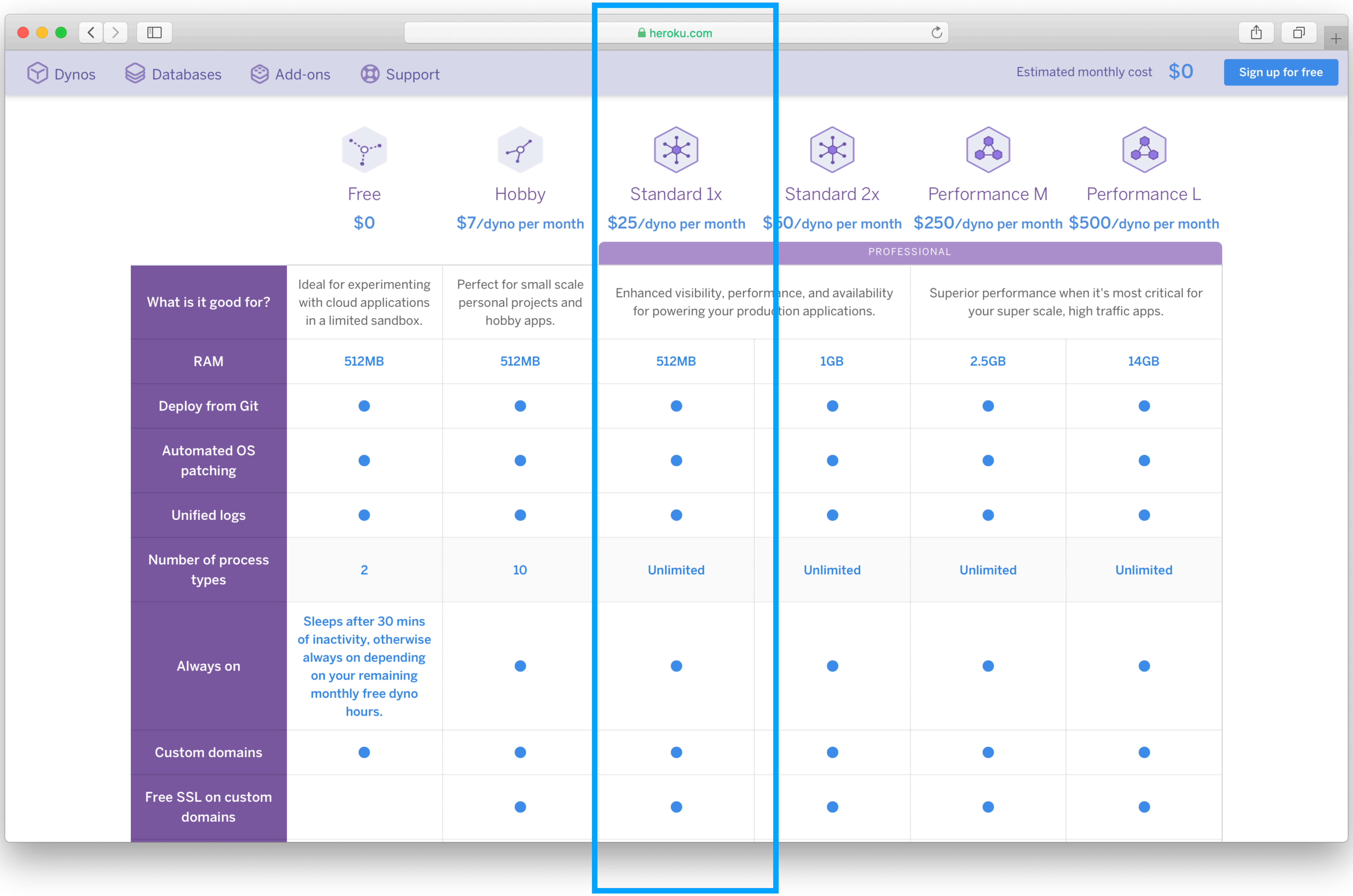
❌ High cost of rendering

❌ Unnecessary re-rendering

❌ `renderToString()` ⬆TTFB ⬆CPU

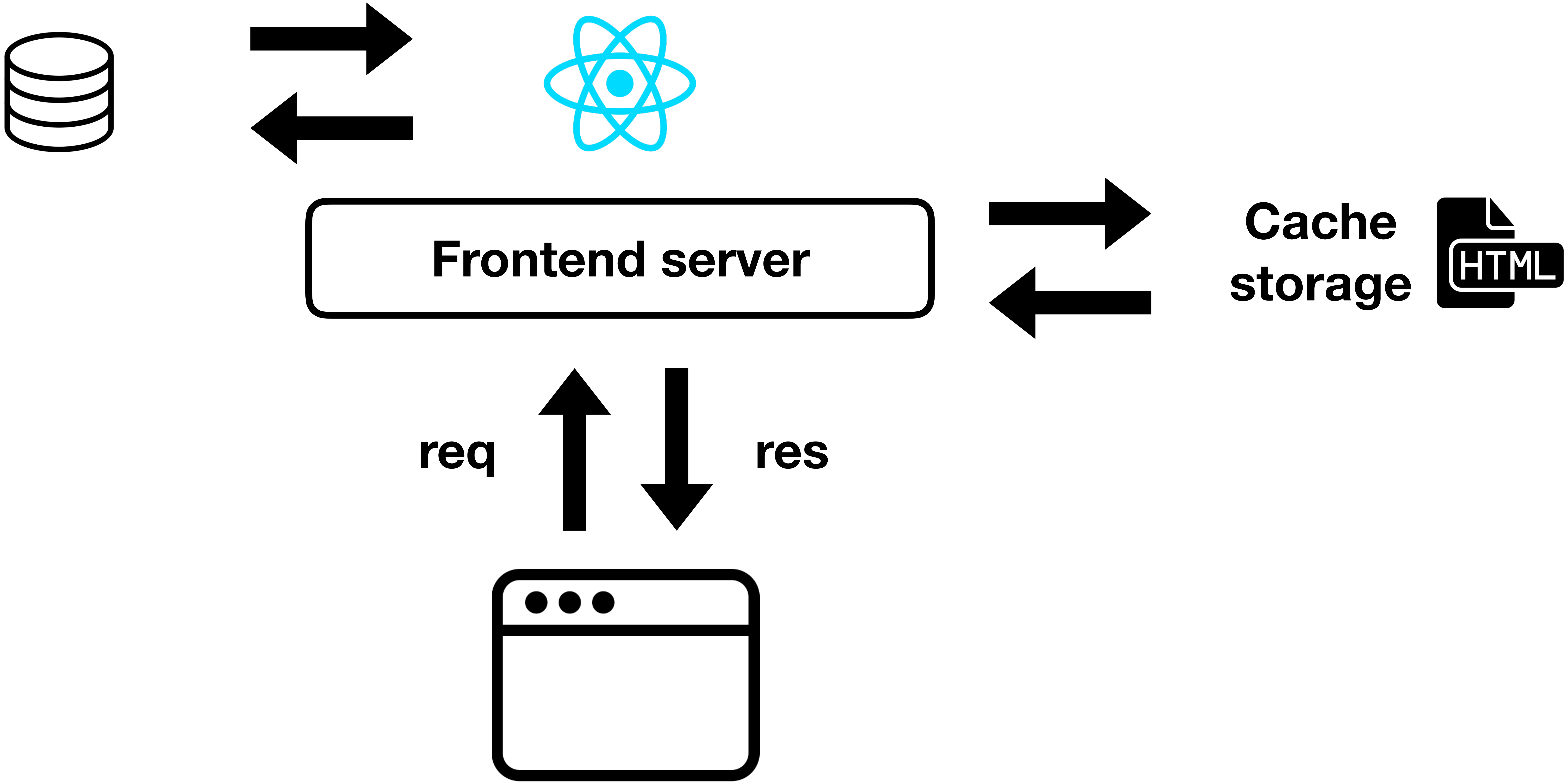
✅ Server-side caching

90K visitors in a month



	Free $0	Hobby $7/dyno per month	Standard 1x $25/dyno per month	Standard 2x $50/dyno per month	Performance M $250/dyno per month	Performance L $500/dyno per month
			PROFESSIONAL			
What is it good for?	Ideal for experimenting with cloud applications in a limited sandbox.	Perfect for small scale personal projects and hobby apps.	Enhanced visibility, performance, and availability for powering your production applications.		Superior performance when it's most critical for your super scale, high traffic apps.	
RAM	512MB	512MB	512MB	1GB	2.5GB	14GB
Deploy from Git	●	●	●	●	●	●
Automated OS patching	●	●	●	●	●	●
Unified logs	●	●	●	●	●	●
Number of process types	2	10	Unlimited	Unlimited	Unlimited	Unlimited
Always on	Sleeps after 30 mins of inactivity, otherwise always on depending on your remaining monthly free dyno hours.	●	●	●	●	●
Custom domains	●	●	●	●	●	●
Free SSL on custom domains		●	●	●	●	●

Our frontend server



Cache already rendered pages

```
const storage = new Storage({ url: REDIS_URL });
const ssrCacheMaxAge = 60 * 60; // 1 hour in seconds
```

Storage

```
const cachedHtml = await storage.get({ key });

if (cachedHtml) {
  res.setHeader("x-cache", "HIT");
  res.send(cachedHtml);
  return;
}
```

take from cache

```
const html = await app.renderToHTML(req, res, route, query);

if (res.statusCode === 200) {
  await storage.set({
    key,
    maxAge: ssrCacheMaxAge,
    value: html
  });
  res.setHeader("x-cache", "MISS");
}

res.send(html);
```

not in the cache

```
app.render(req, res, route, query);
```

all other cases

More detailed

- **Stream rendering to reduce TTFB and CPU load**

  https://github.com/zeit/next.js/issues/1209

- **Component-based server-side caching:**

  1. https://github.com/walmartlabs/react-ssr-optimization

  2. https://github.com/FormidableLabs/rapscallion

CSR better for servers,
SSR better for users

❌ High cost of rendering

✅ Caching

Caching + A/B testing

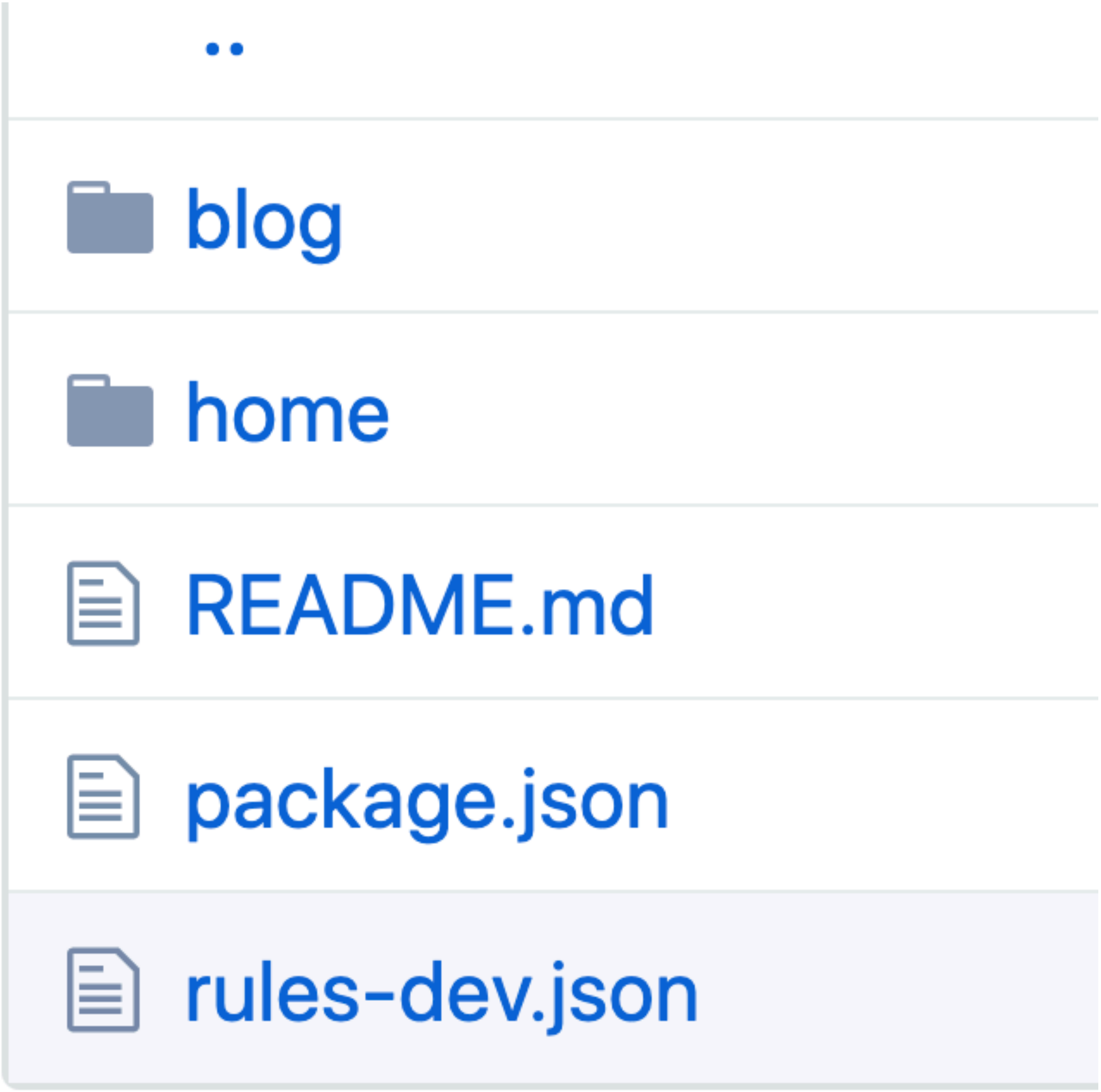
```
static async getInitialProps({ Component, ctx }) {

  if (ctx.isServer) {
    const variant = defineVariant(["A", "B"]);
    ctx.store.dispatch({ type: "SETVARIANT", payload: variant });
  }
}
```

Caching

_app.js

One more thing



..

blog

home

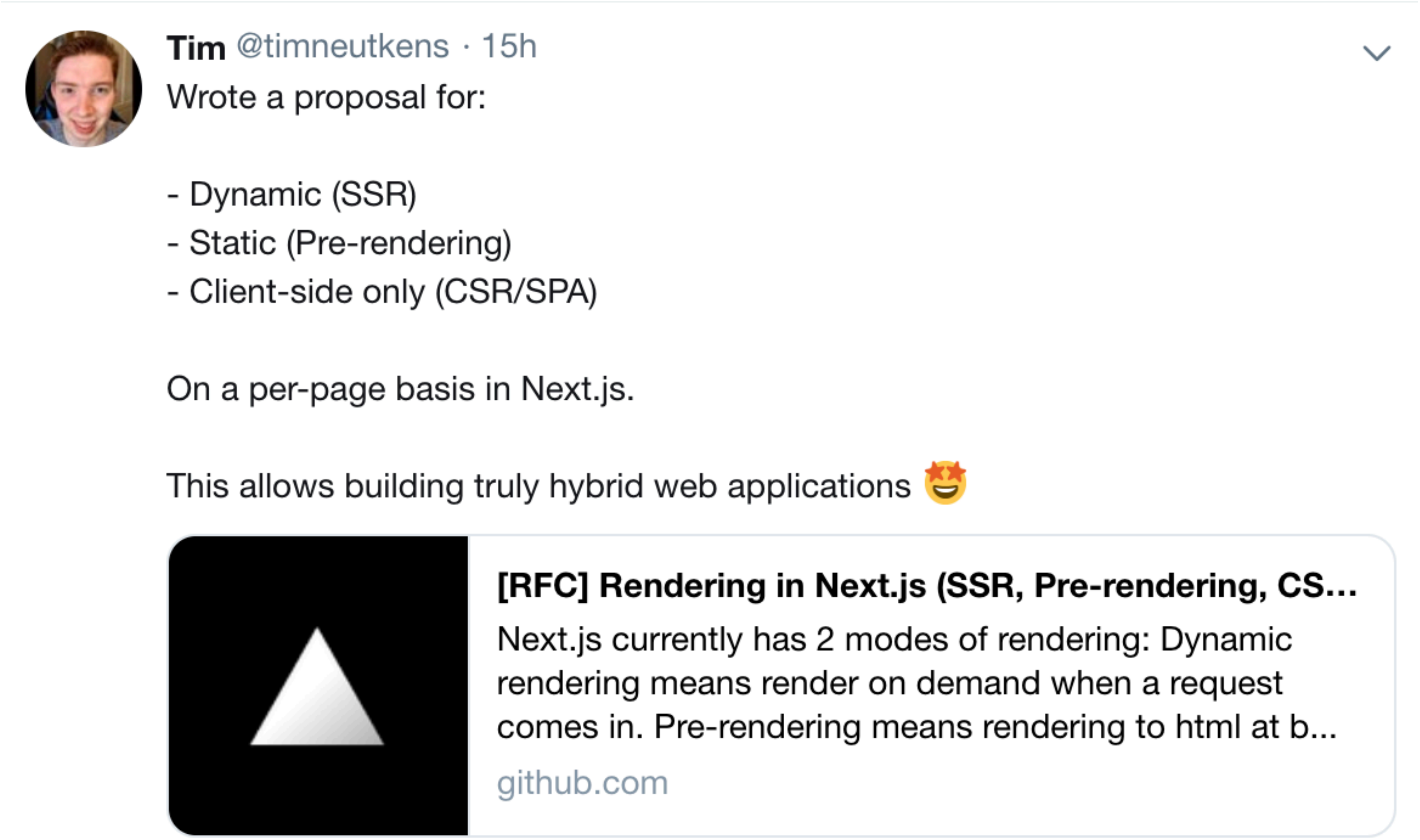
README.md

package.json

rules-dev.json

Multi Zones

https://nextjs.org/docs#multi-zones



Tim @timneutkens · 15h

Wrote a proposal for:

- Dynamic (SSR)
- Static (Pre-rendering)
- Client-side only (CSR/SPA)

On a per-page basis in Next.js.

This allows building truly hybrid web applications 🤩

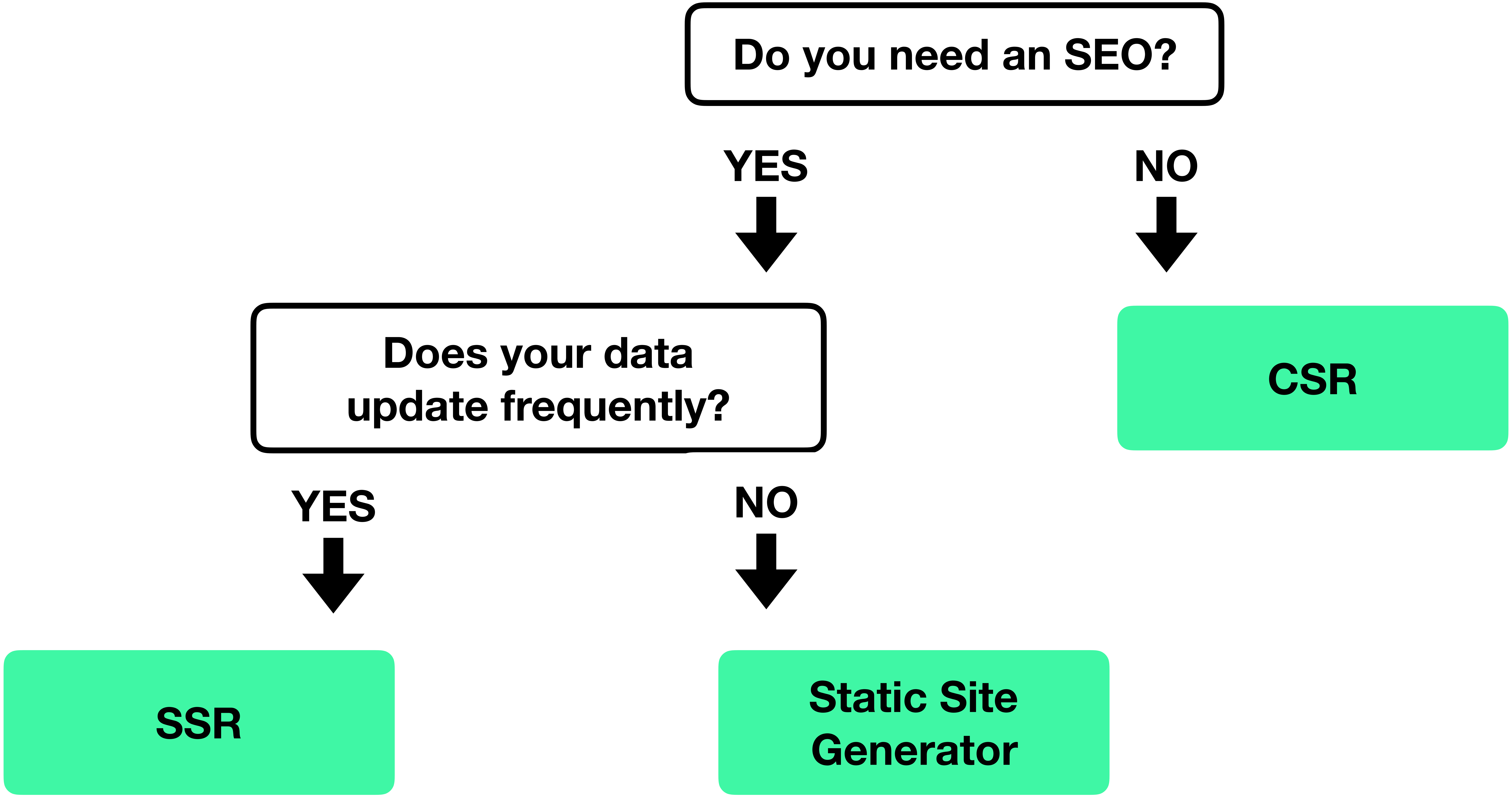
[RFC] Rendering in Next.js (SSR, Pre-rendering, CS...

Next.js currently has 2 modes of rendering: Dynamic rendering means render on demand when a request comes in. Pre-rendering means rendering to html at b...

github.com

[RFC] Hybrid app

https://github.com/zeit/next.js/issues/7355



Do you need an SEO?

YES

NO

Does your data update frequently?

CSR

YES

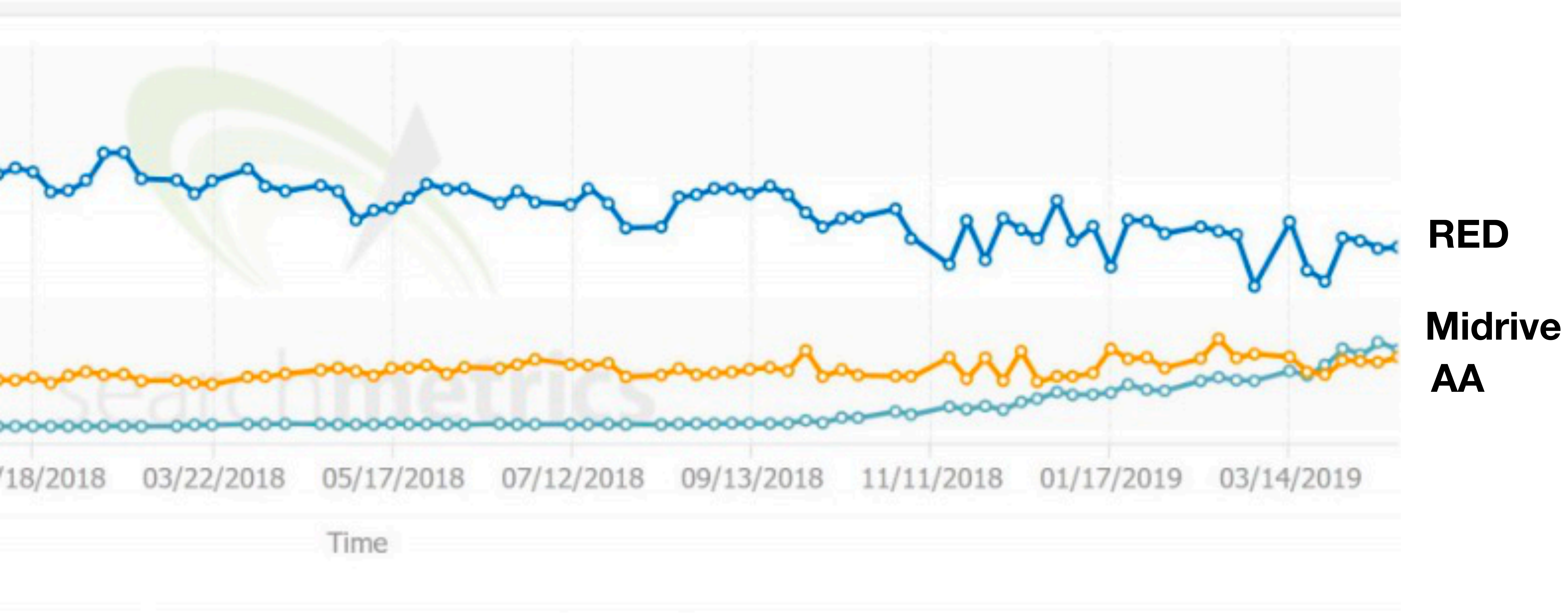
NO

SSR

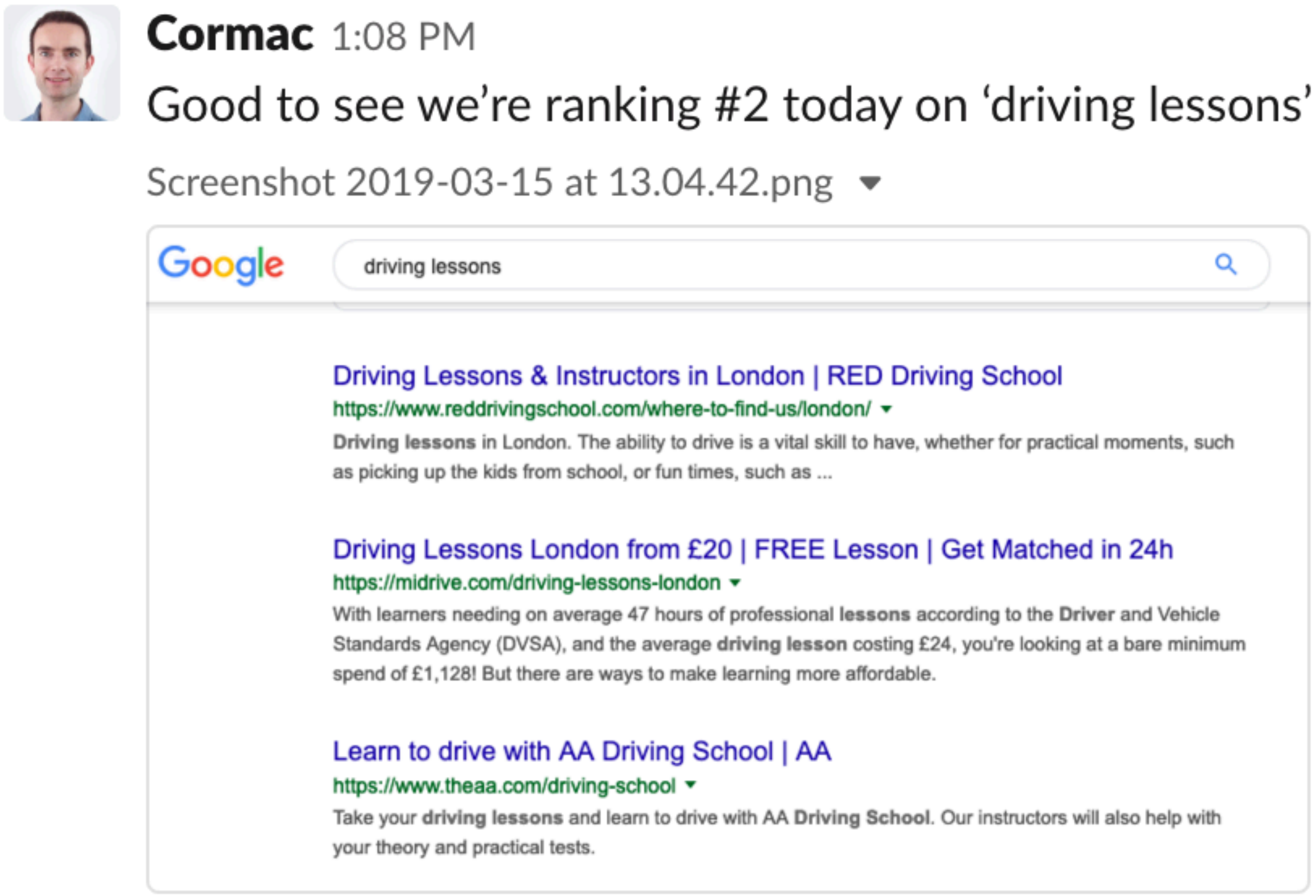
Static Site Generator

Results

SSR + SEO Marketing = 💚



SEO Visibility



Cormac 1:08 PM

Good to see we’re ranking #2 today on ‘driving lessons’

Screenshot 2019-03-15 at 13.04.42.png

Driving Lessons & Instructors in London | RED Driving School
https://www.reddrivingschool.com/where-to-find-us/london/

Driving lessons in London. The ability to drive is a vital skill to have, whether for practical moments, such as picking up the kids from school, or fun times, such as ...

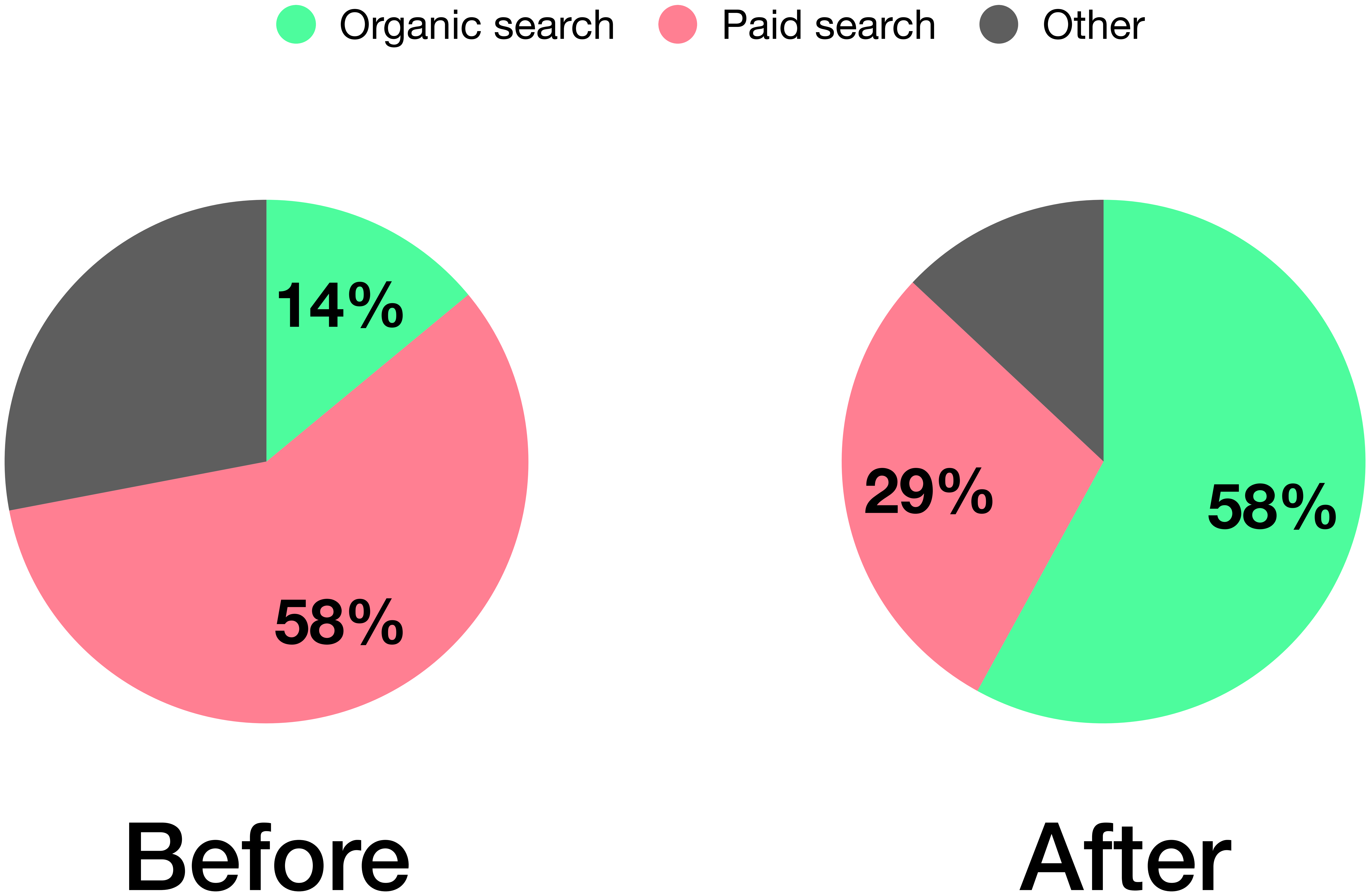
Driving Lessons London from £20 | FREE Lesson | Get Matched in 24h
https://midrive.com/driving-lessons-london

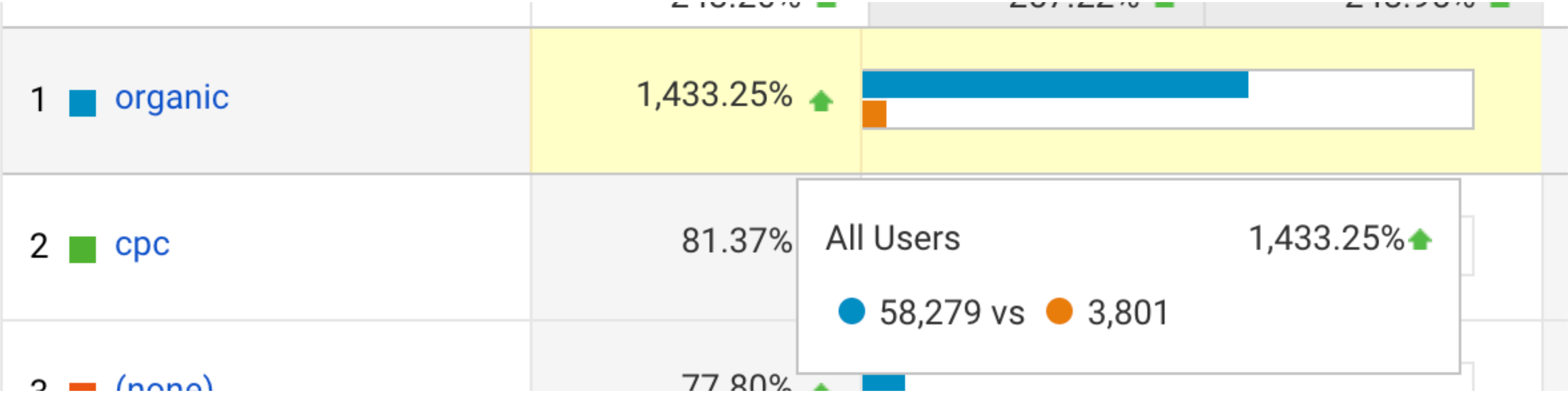
With learners needing on average 47 hours of professional **lessons** according to the **Driver** and Vehicle Standards Agency (DVSA), and the average **driving lesson** costing £24, you're looking at a bare minimum spend of £1,128! But there are ways to make learning more affordable.

Learn to drive with AA Driving School | AA
https://www.theaa.com/driving-school

Take your **driving lessons** and learn to drive with AA **Driving School**. Our instructors will also help with your theory and practical tests.

SEO Visibility


Organic search
Paid search
Other
14%
58%
Before
29%
58%
After



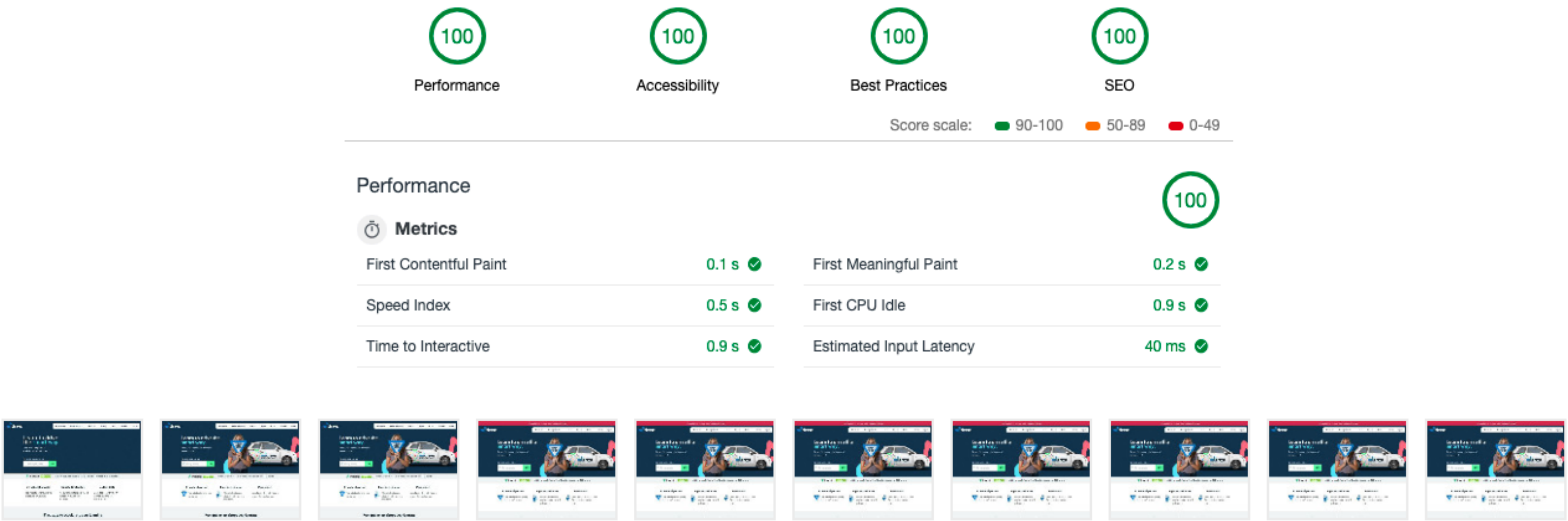
1	🟦 organic	1,433.25%
2	🟩 cpc	81.37%
3	🟧 (none)	77.80%

All Users 1,433.25%

● 58,279 vs ● 3,801

Before: 4K **After: 60K**

WiFi



100 Performance

100 Accessibility

100 Best Practices

100 SEO

Score scale: 🟩 90-100 🟧 50-89 🟥 0-49

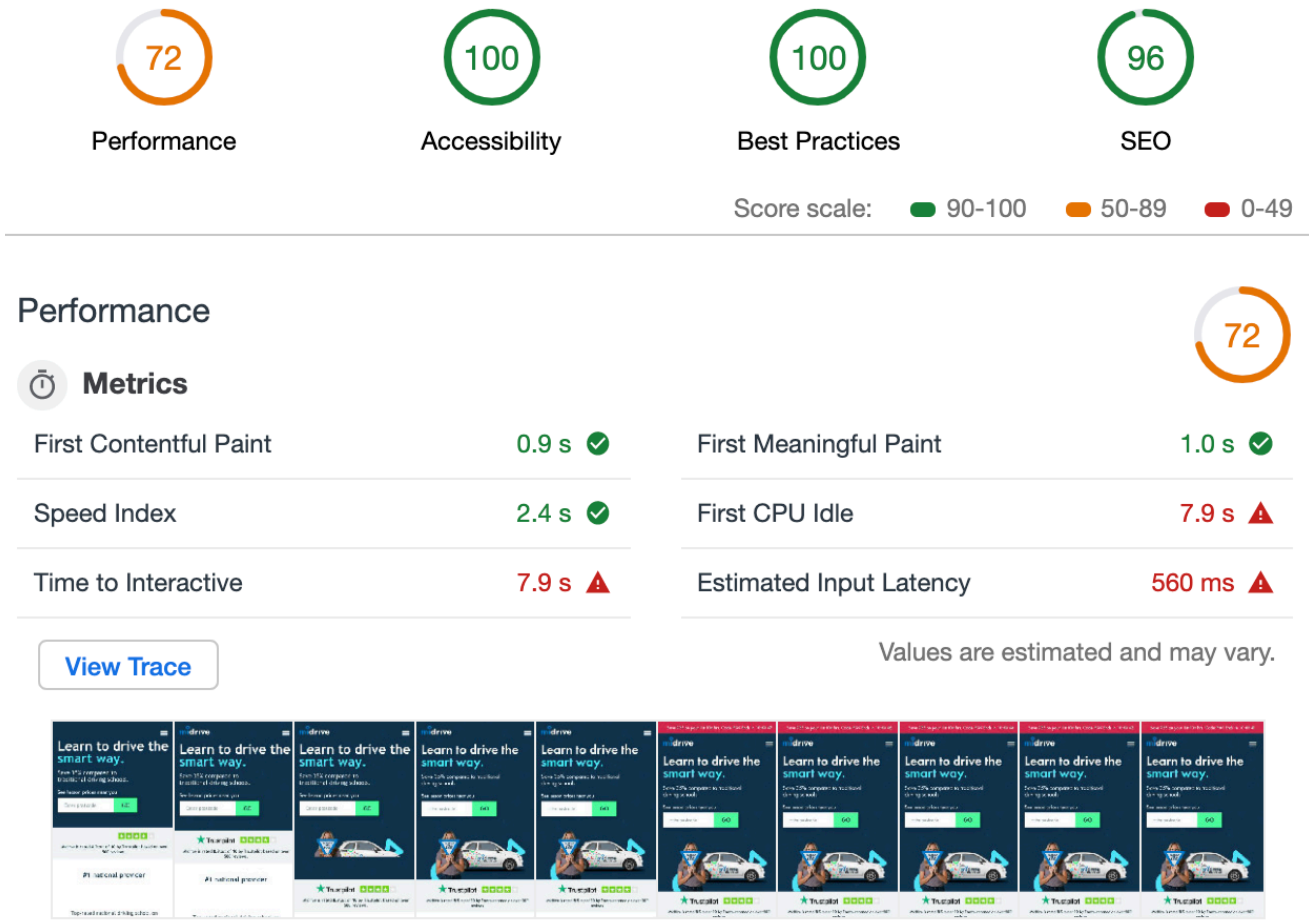
Performance

100

Metrics

First Contentful Paint	0.1 s ✓	First Meaningful Paint	0.2 s ✓
Speed Index	0.5 s ✓	First CPU Idle	0.9 s ✓
Time to Interactive	0.9 s ✓	Estimated Input Latency	40 ms ✓

3G



72 Performance

100 Accessibility

100 Best Practices

96 SEO

Score scale: 🟩 90-100 🟧 50-89 🟥 0-49

Performance

72

Metrics

First Contentful Paint	0.9 s ✓	First Meaningful Paint	1.0 s ✓
Speed Index	2.4 s ✓	First CPU Idle	7.9 s ▲
Time to Interactive	7.9 s ▲	Estimated Input Latency	560 ms ▲

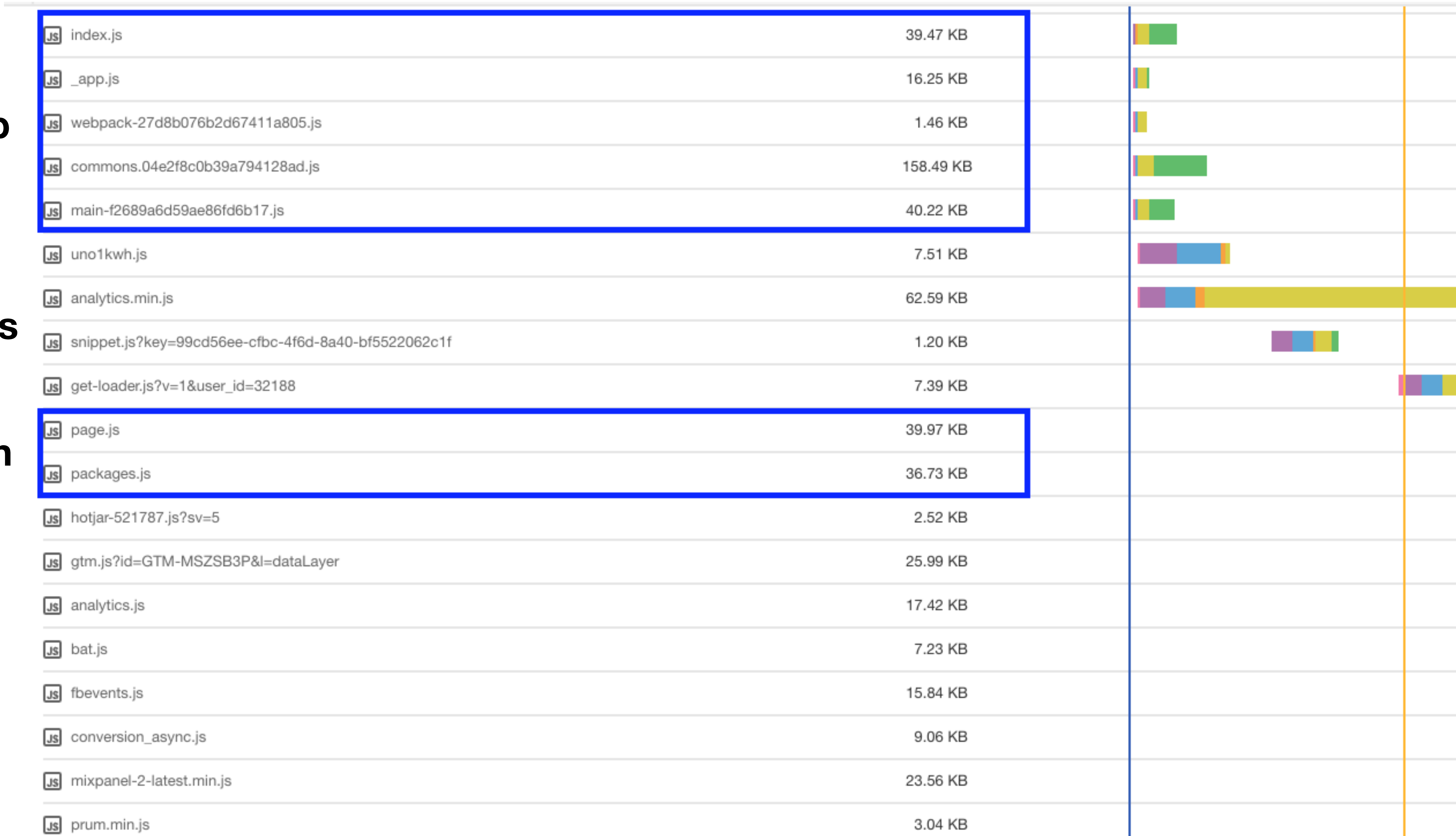
View Trace

Values are estimated and may vary.

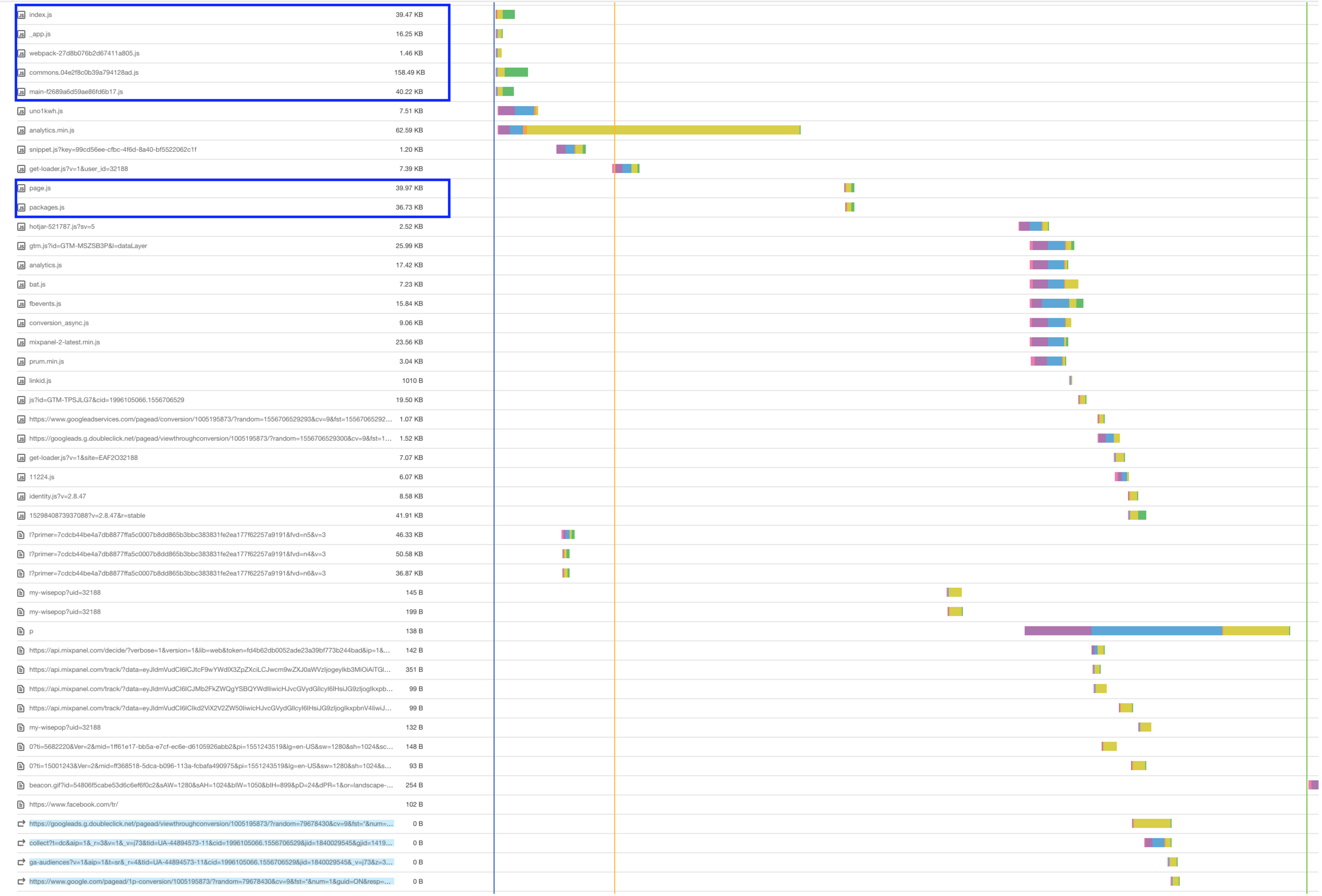
App

Analytics

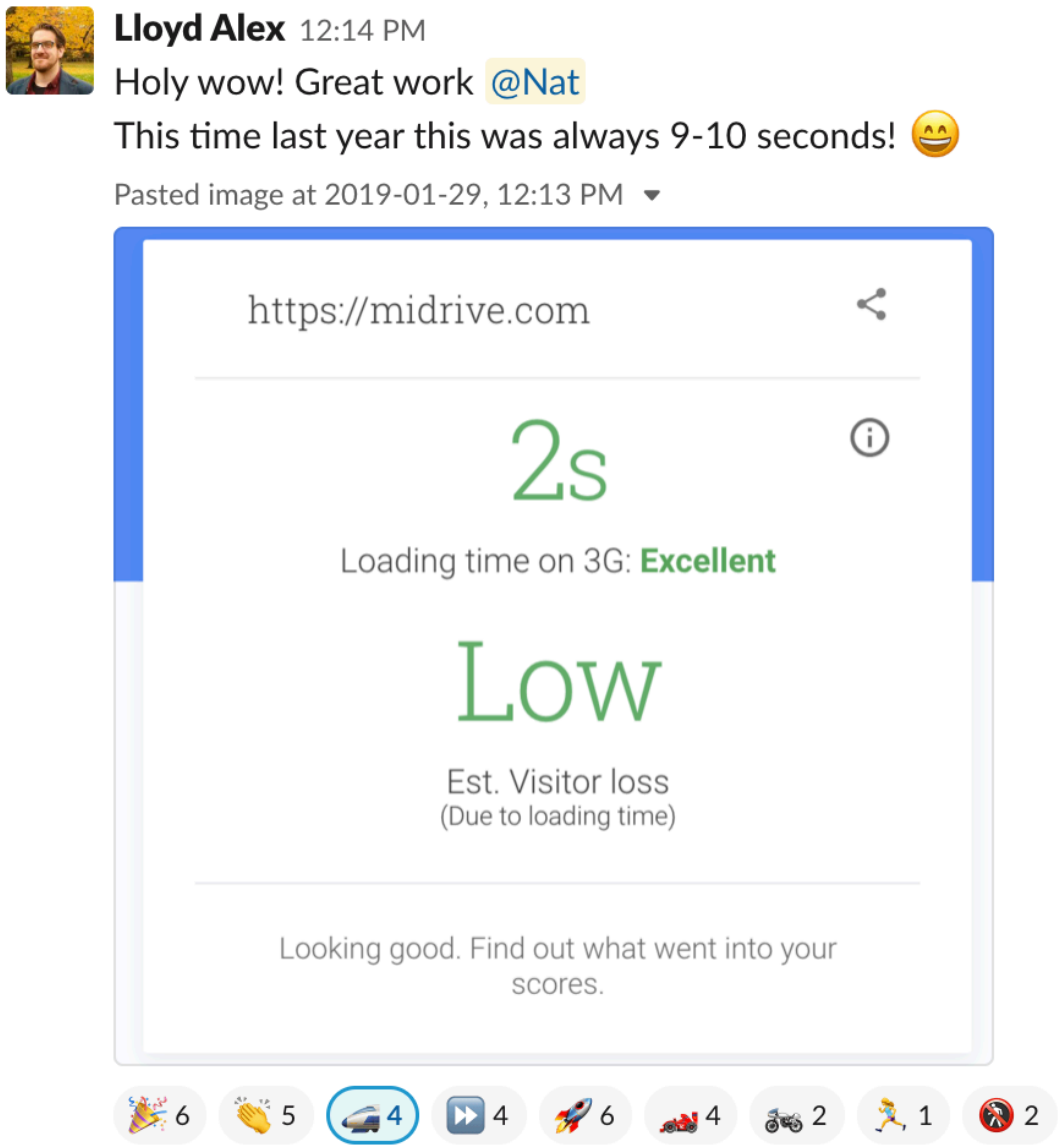
Prefetch



index.js	39.47 KB
_app.js	16.25 KB
webpack-27d8b076b2d67411a805.js	1.46 KB
commons.04e2f8c0b39a794128ad.js	158.49 KB
main-f2689a6d59ae86fd6b17.js	40.22 KB
uno1kwh.js	7.51 KB
analytics.min.js	62.59 KB
snippet.js?key=99cd56ee-cfbc-4f6d-8a40-bf5522062c1f	1.20 KB
get-loader.js?v=1&user_id=32188	7.39 KB
page.js	39.97 KB
packages.js	36.73 KB
hotjar-521787.js?sv=5	2.52 KB
gtm.js?id=GTM-MSZSB3P&l=dataLayer	25.99 KB
analytics.js	17.42 KB
bat.js	7.23 KB
fbevents.js	15.84 KB
conversion_async.js	9.06 KB
mixpanel-2-latest.min.js	23.56 KB
prum.min.js	3.04 KB



index.js	39.47 KB
_app.js	16.25 KB
webpack-27d8b076b2d67411a805.js	1.46 KB
commons.04e2f8c0b39a794128ad.js	158.49 KB
main-f2689a6d59ae86fd6b17.js	40.22 KB
uno1kwh.js	7.51 KB
analytics.min.js	62.59 KB
snippet.js?key=99cd56ee-cfbc-4f6d-8a40-bf5522062c1f	1.20 KB
get-loader.js?v=1&user_id=32188	7.39 KB
page.js	39.97 KB
packages.js	36.73 KB
hotjar-521787.js?sv=5	2.52 KB
gtm.js?id=GTM-MSZSB3P&l=dataLayer	25.99 KB
analytics.js	17.42 KB
bat.js	7.23 KB
fbevents.js	15.84 KB
conversion_async.js	9.06 KB
mixpanel-2-latest.min.js	23.56 KB
prum.min.js	3.04 KB
linkid.js	1010 B
js?id=GTM-TPSJLG7&cid=1996105066.1556706529	19.50 KB
https://www.googleadservices.com/pagead/conversion/1005195873/?random=1556706529293&cv=9&fst=15567065292…	1.07 KB
https://googleads.g.doubleclick.net/pagead/viewthroughconversion/1005195873/?random=1556706529300&cv=9&fst=1…	1.52 KB
get-loader.js?v=1&site=EAF2O32188	7.07 KB
11224.js	6.07 KB
identity.js?v=2.8.47	8.58 KB
1529840873937088?v=2.8.47&r=stable	41.91 KB
l?primer=7cdcb44be4a7db8877ffa5c0007b8dd865b3bbc383831fe2ea177f62257a9191&fvd=n5&v=3	46.33 KB
l?primer=7cdcb44be4a7db8877ffa5c0007b8dd865b3bbc383831fe2ea177f62257a9191&fvd=n4&v=3	50.58 KB
l?primer=7cdcb44be4a7db8877ffa5c0007b8dd865b3bbc383831fe2ea177f62257a9191&fvd=n6&v=3	36.87 KB
my-wisepop?uid=32188	145 B
my-wisepop?uid=32188	199 B
p	138 B
https://api.mixpanel.com/decide/?verbose=1&version=1&lib=web&token=fd4b62db0052ade23a39bf773b244bad&ip=1&…	142 B
https://api.mixpanel.com/track/?data=eyJldmVudCI6ICJtcF9wYWdlX3ZpZXciLCJwcm9wZXJ0aWVzIjogeyIkb3MiOiAiTGl…	351 B
https://api.mixpanel.com/track/?data=eyJldmVudCI6ICJMb2FkZWQgYSBQYWdlIiwicHJvcGVydGllcyI6IHsiJG9zIjogIkxpb…	99 B
https://api.mixpanel.com/track/?data=eyJldmVudCI6ICIkd2ViX2V2ZW50IiwicHJvcGVydGllcyI6IHsiJG9zIjogIkxpbnV4IiwiJ…	99 B
my-wisepop?uid=32188	132 B
0?ti=5682220&Ver=2&mid=1ff61e17-bb5a-e7cf-ec6e-d6105926abb2&pi=1551243519&lg=en-US&sw=1280&sh=1024&sc…	148 B
0?ti=15001243&Ver=2&mid=ff368518-5dca-b096-113a-fcbafa490975&pi=1551243519&lg=en-US&sw=1280&sh=1024&s…	93 B
beacon.gif?id=54806f5cabe53d6c6ef6f0c2&sAW=1280&sAH=1024&bIW=1050&bIH=899&pD=24&dPR=1&or=landscape-…	254 B
https://www.facebook.com/tr/	102 B
https://googleads.g.doubleclick.net/pagead/viewthroughconversion/1005195873/?random=79678430&cv=9&fst=*&num=…	0 B
collect?t=dc&aip=1&_r=3&v=1&_v=j73&tid=UA-44894573-11&cid=1996105066.1556706529&jid=1840029545&gjid=1419…	0 B
ga-audiences?v=1&aip=1&t=sr&_r=4&tid=UA-44894573-11&cid=1996105066.1556706529&jid=1840029545&_v=j73&z=3…	0 B
https://www.google.com/pagead/1p-conversion/1005195873/?random=79678430&cv=9&fst=*&num=1&guid=ON&resp=…	0 B



Lloyd Alex 12:14 PM

Holy wow! Great work @Nat

This time last year this was always 9-10 seconds! 😄

Pasted image at 2019-01-29, 12:13 PM ▾

https://midrive.com

2s

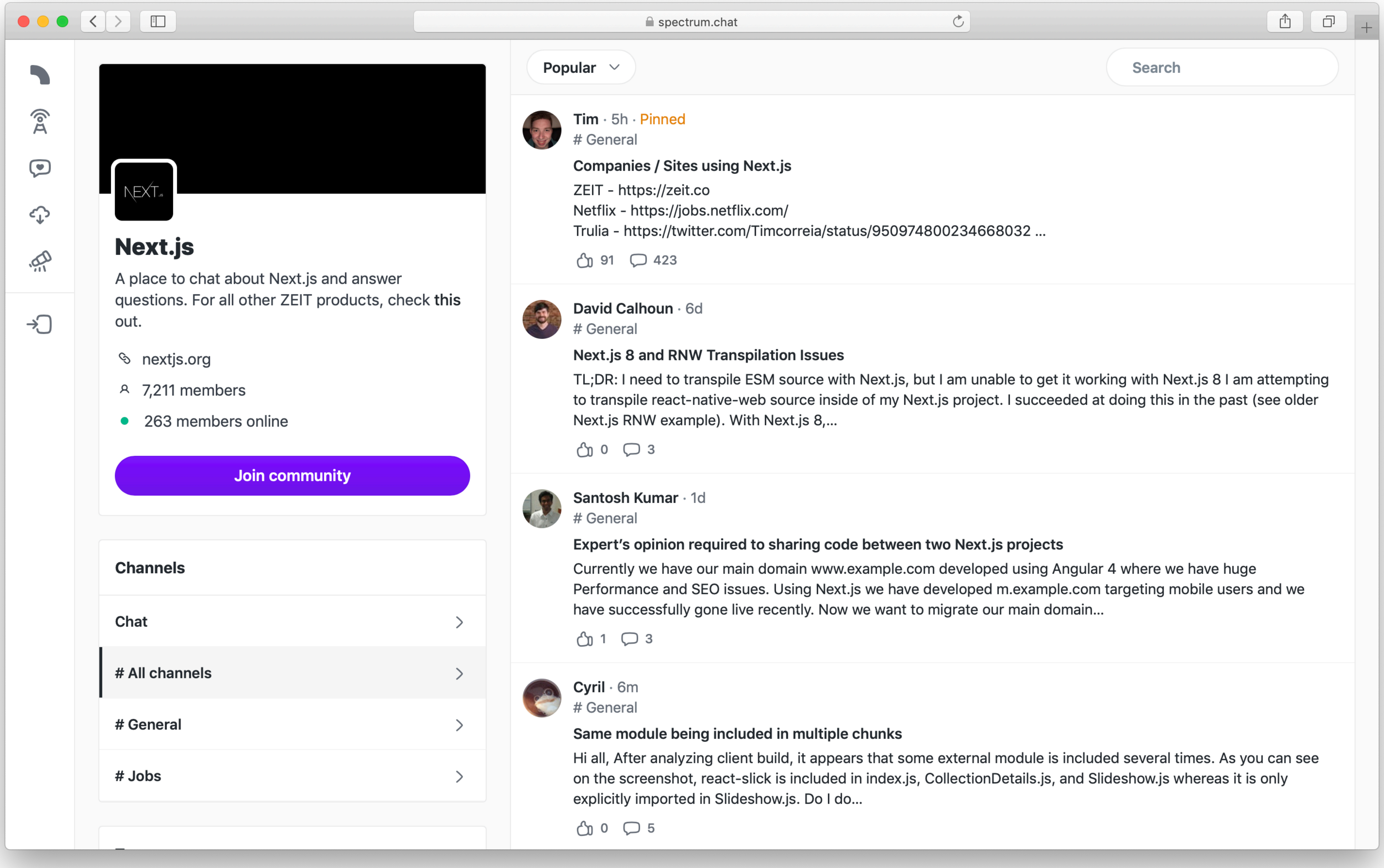
Loading time on 3G: **Excellent**

Low

Est. Visitor loss
(Due to loading time)

Looking good. Find out what went into your scores.

🎉 6 👏 5 🚄 4 ⏩ 4 🚀 6 🏎️ 4 🏍️ 2 🏃 1 🚷 2



Next.js

A place to chat about Next.js and answer questions. For all other ZEIT products, check this out.

nextjs.org

7,211 members

263 members online

Join community

Channels

Chat

All channels

General

Jobs

Tim · 5h · Pinned
General

Companies / Sites using Next.js

ZEIT - https://zeit.co
Netflix - https://jobs.netflix.com/
Trulia - https://twitter.com/Timcorreia/status/950974800234668032 ...

91 423

David Calhoun · 6d
General

Next.js 8 and RNW Transpilation Issues

TL;DR: I need to transpile ESM source with Next.js, but I am unable to get it working with Next.js 8 I am attempting to transpile react-native-web source inside of my Next.js project. I succeeded at doing this in the past (see older Next.js RNW example). With Next.js 8,...

0 3

Santosh Kumar · 1d
General

Expert's opinion required to sharing code between two Next.js projects

Currently we have our main domain www.example.com developed using Angular 4 where we have huge Performance and SEO issues. Using Next.js we have developed m.example.com targeting mobile users and we have successfully gone live recently. Now we want to migrate our main domain...

1 3

Cyril · 6m
General

Same module being included in multiple chunks

Hi all, After analyzing client build, it appears that some external module is included several times. As you can see on the screenshot, react-slick is included in index.js, CollectionDetails.js, and Slideshow.js whereas it is only explicitly imported in Slideshow.js. Do I do...

0 5

https://spectrum.chat/next-js

Thanks!

@meuwka