Are Progressive Web Apps the Future of Web Development?

This talk is available on my website: https://oren.github.io

What are PWAs

(the developer's version)

- Native-level experience.
- Performance & responsiveness.
- Single codebase.
- Multiple devices, desktop and mobile.

What are PWAs

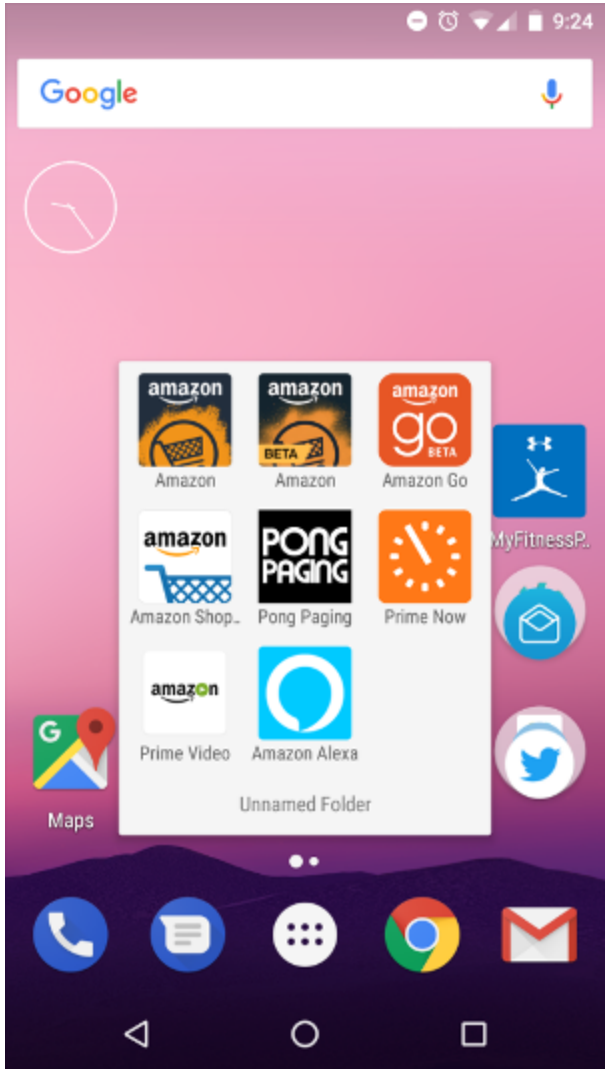
(the product manager version)

A way to improve the following:

- Conversion rate
- Page visits
- User time spent on app
- Quicker time to market
- Business model freedom
- App discovery
- App installation fatigue
- App loyalty
- App reach

https://cloudfour.com/thinks/the-business-case-for-progressive-web-apps/

Not Everyone Lives in a Wealthy Nation



Apple

(Takes 30% of your sales)

Show Case 1 - AliExpress

AliExpress increases conversion rate for new users by 104% with new Progressive Web App

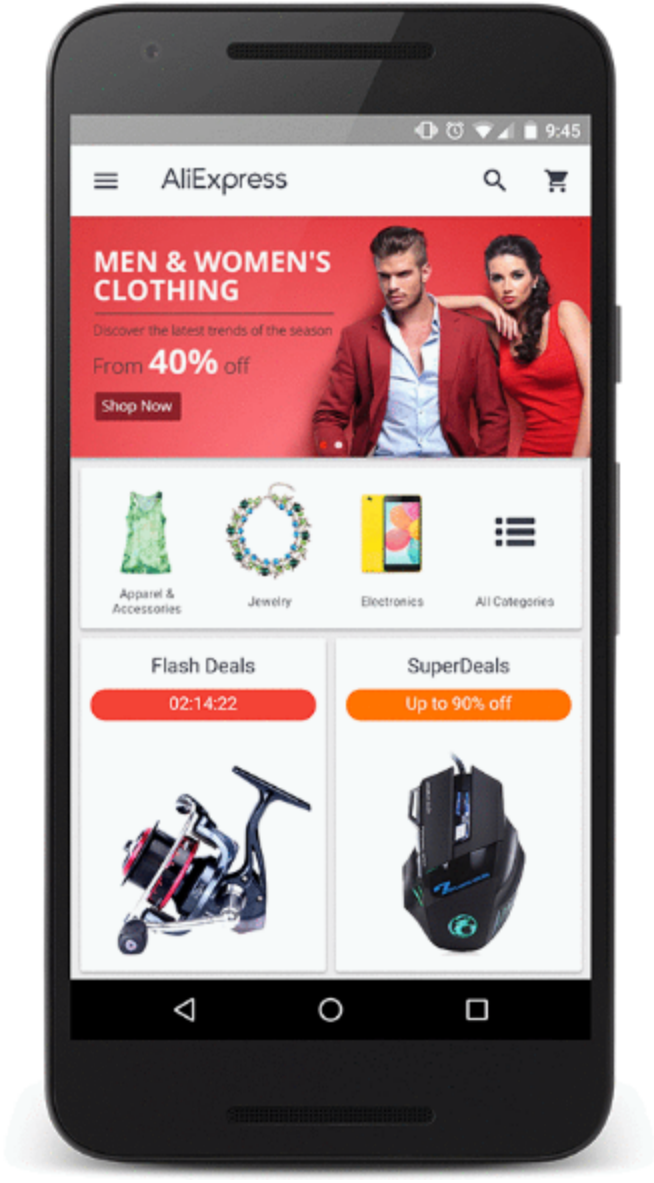
Results

- ✓ 104% for new users across all browsers; 82% increase in iOS conversion rate
- ✓ 2X more pages visited per session per user across all browsers
- ✓ 74% increase in time spent per session across all browsers

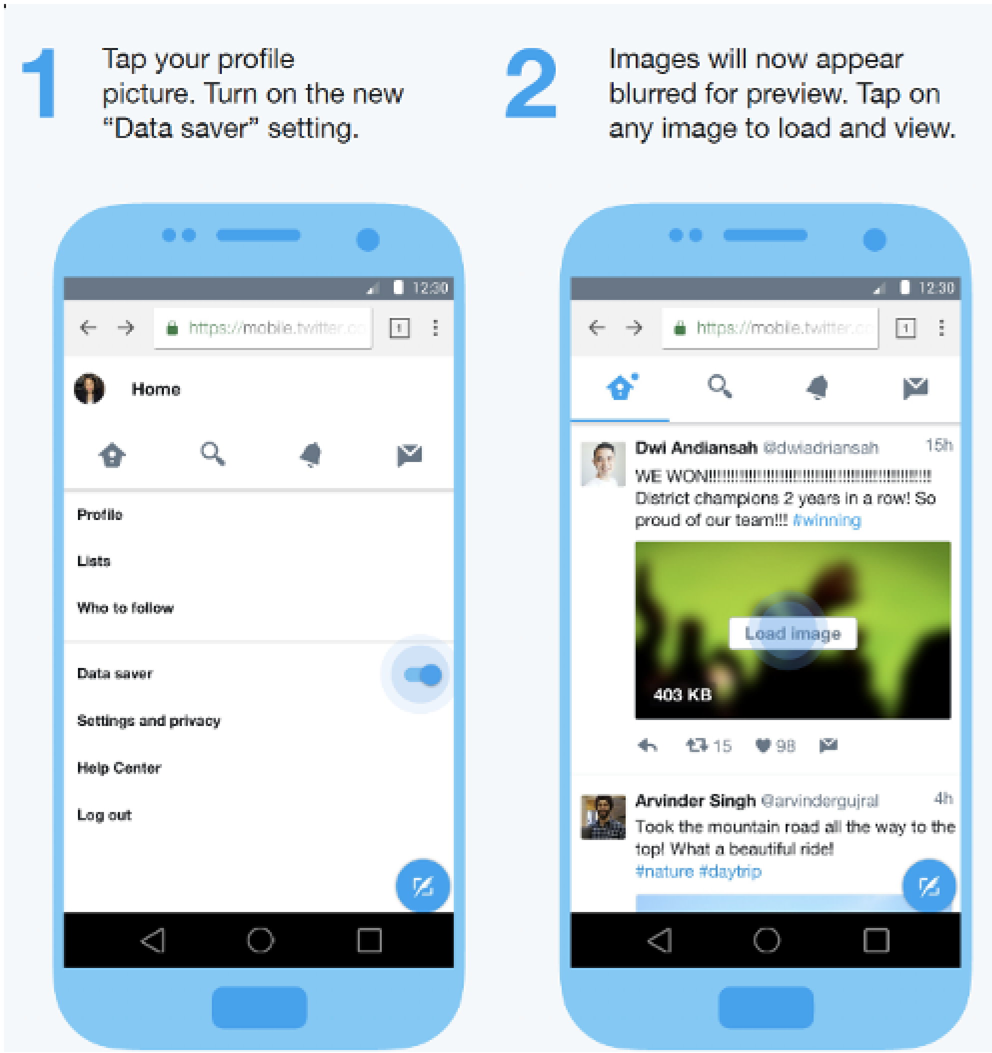
DOWNLOAD PDF CASE STUDY

About AliExpress

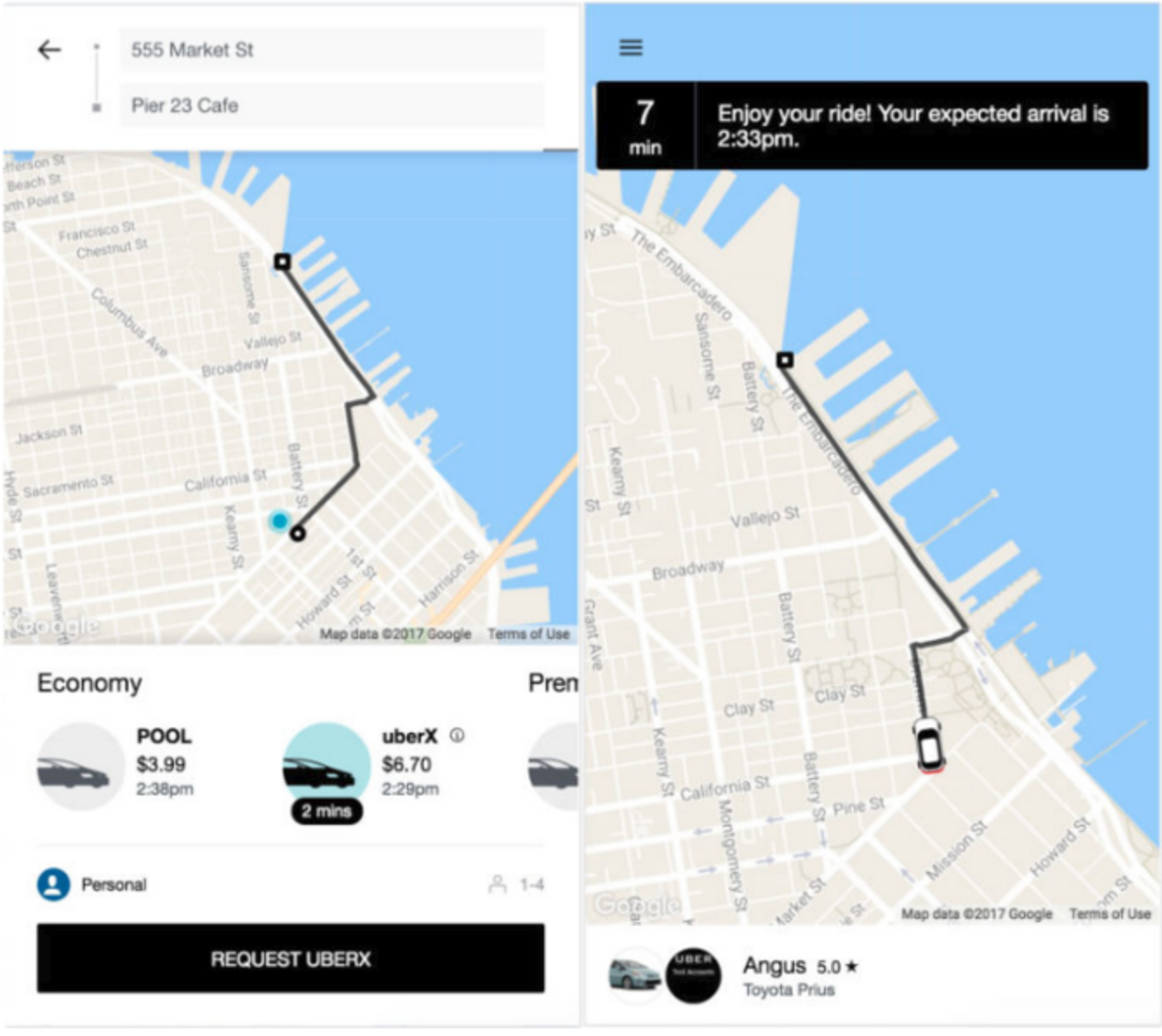
"Smarter shopping, better living!" is the motto of AliExpress, a website where shoppers can buy everything from baby clothes to refrigerators directly from China. Part of the Alibaba Group, the global online retail marketplace is now a popular e-commerce site in America, Russia, and Brazil.



Show Case 2 - Twitter



Show Case 3 - UBER



m.uber mimics the native Uber app flow, allowing riders to specify their ride request and track driver location after being matched.

How to Achieve a Native-like Experience?

- Available offline/weak network using Service Worker.
- Measure peformance with the tool Lighthouse.
- Icon on home screen.
- (Android/Mozilla/IE) App-like 'loading' page, no URL, push notification and more.

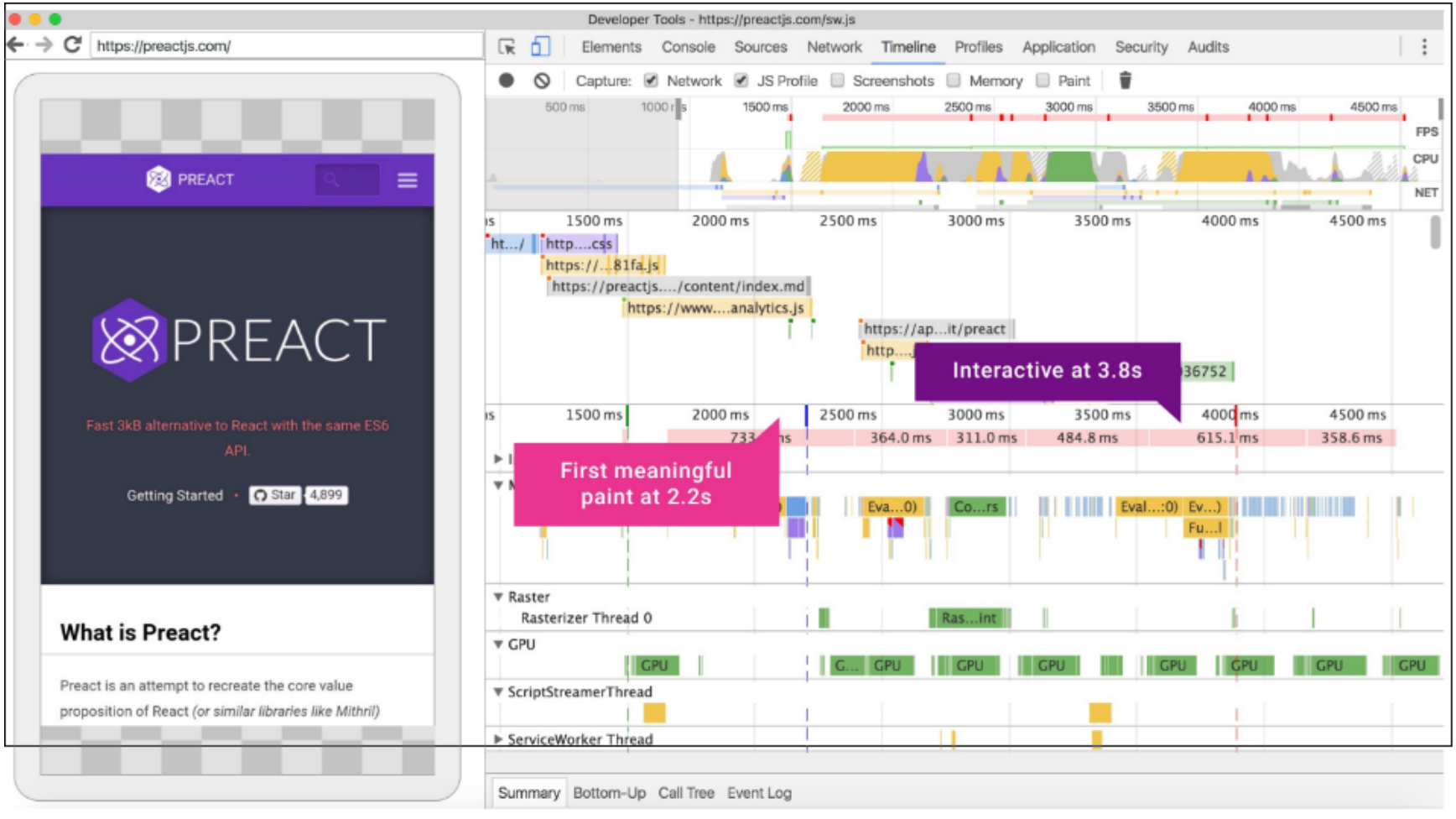
The PRPL Pattern

https://developers.google.com/web/fundamentals/performance/prpl-pattern/

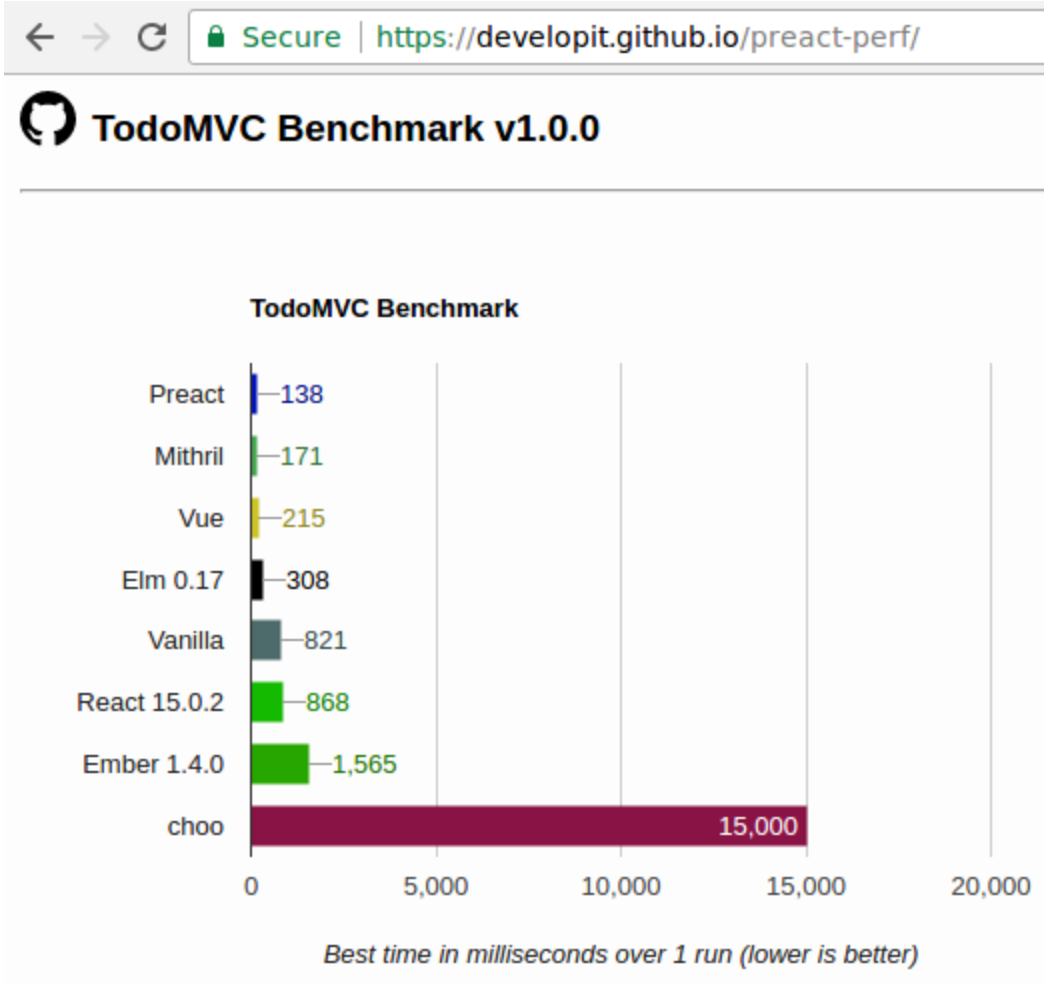
- Precache
- Render initial route
- Push server
- Lazy-load

Preact

React on steroids - 3k, similar API



Preact - Performance



https://developit.github.io/preact-perf

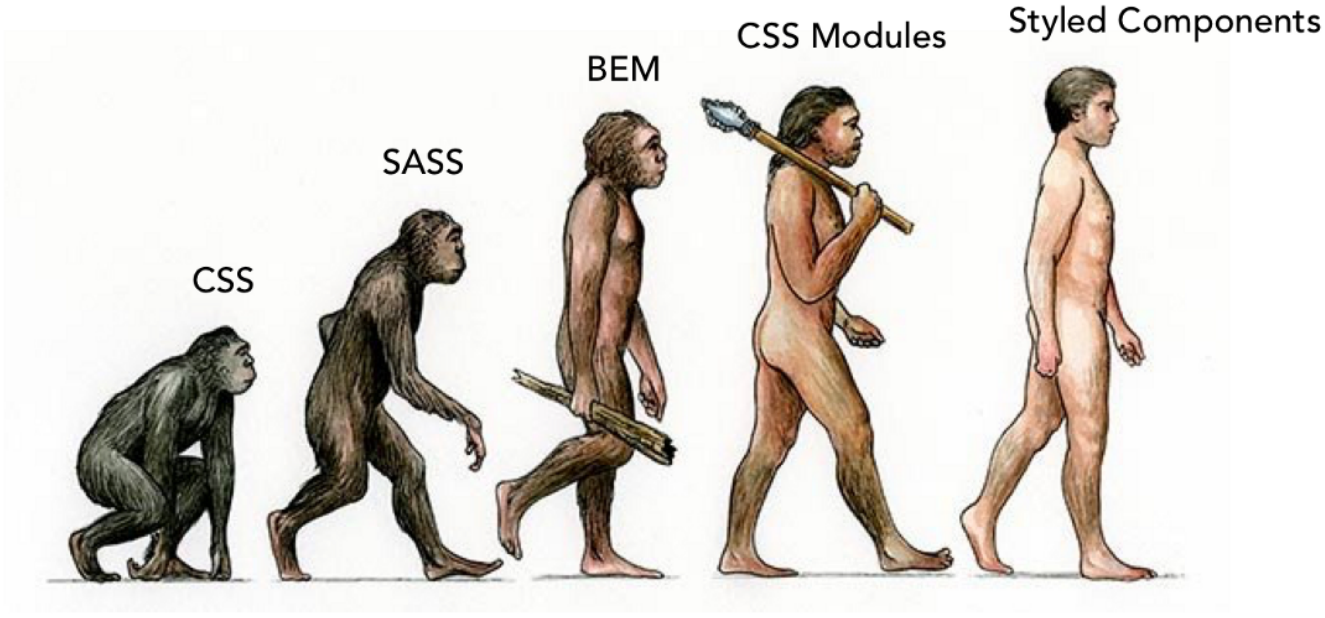
What does Webpack do for us?

- Creates a single js file from all the JavaScript files.
- Enables a dev server with hot module reloading - https://webpack.github.io/docs/hot-module-replacement-with-webpack.html.
- Dynamic bundle splitting - https://webpack.js.org/guides/code-splitting-async.
- Tree-shaking capabilities - https://webpack.js.org/guides/tree-shaking

What does Babel do for us?

Converts ES2015 syntax to ES5 so my browser will be able to render the JavaScript. Things like import, let, require, arrow function, and also converts jsx to JavaScript.

CSS in Javascript



- https://github.com/css-modules/css-modules
- https://m.alphasights.com/css-evolution-from-css-sass-bem-css-modules-to-styled-components-d4c1da3a659b

CSS Modules

- https://medium.com/@gajus/stop-using-css-in-javascript-for-web-development-fa32fb873dcc

Preact CLI

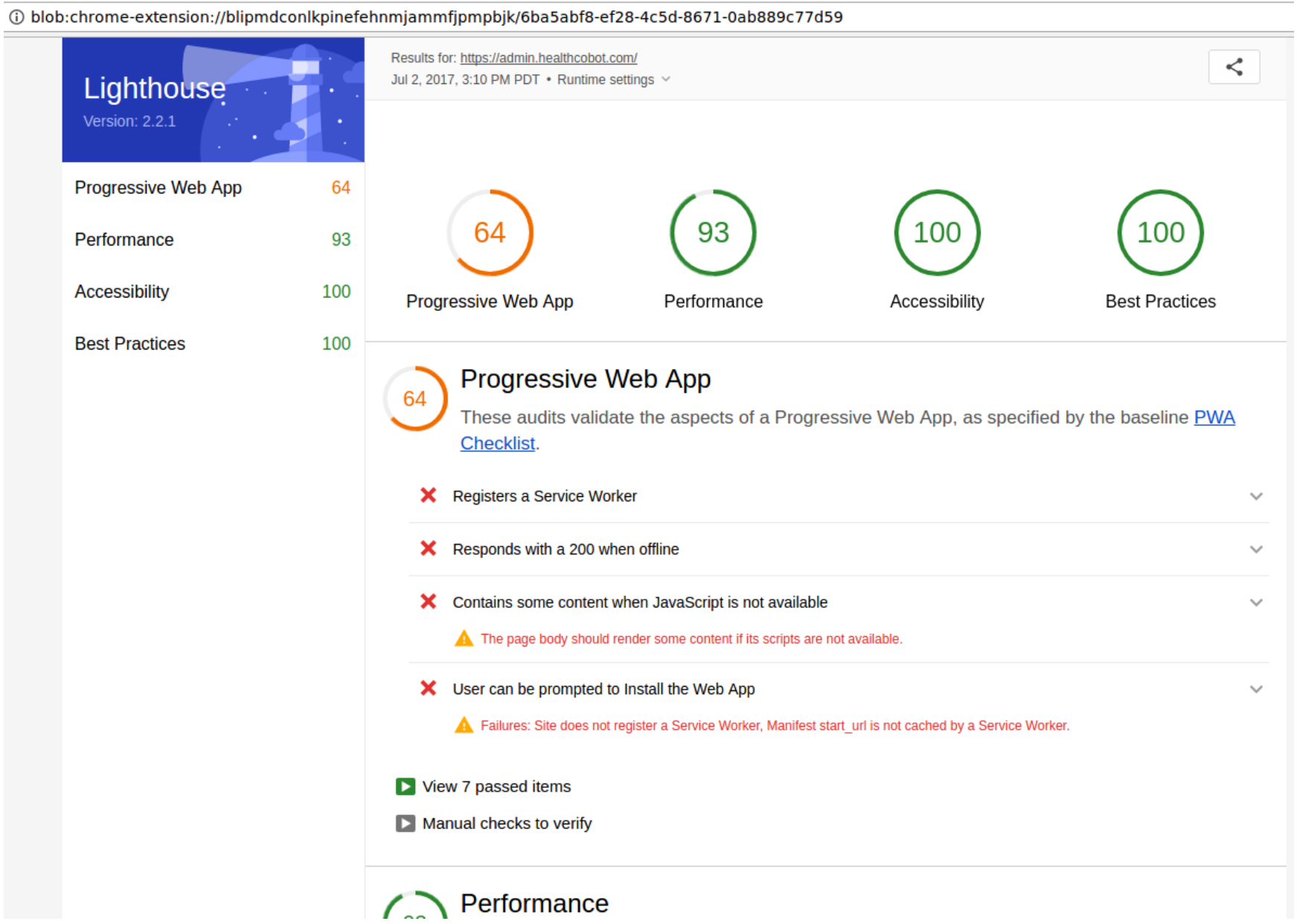
```
npm i -g preact-cli
```

```
preact create app
cd app
preact watch
```

Preact - Baked in PRPL

- **Precache:** The service worker is configured for offline use.
- **Render initial route:** use a tool called prerender.
- **HTTP2/Push Server:** `preact serve` creates a simple HTTP2 server.
- **Lazy-Load:** Automatic code-splitting for routes and shared "chunks" are optimized for reuse. Navigating from `/about` to `/contact` will dynamically (or "lazily") load the "contact" bundle and any associated chunks. This is all thanks to webpack.

Lighthouse


blob:chrome-extension://blipmdconlkpinefehnmjammfjpmpbjk/6ba5abf8-ef28-4c5d-8671-0ab889c77d59
Lighthouse
Version: 2.2.1
Progressive Web App 64
Performance 93
Accessibility 100
Best Practices 100
Results for: https://admin.healthcobot.com/
Jul 2, 2017, 3:10 PM PDT • Runtime settings
64
Progressive Web App
93
Performance
100
Accessibility
100
Best Practices
64
Progressive Web App
These audits validate the aspects of a Progressive Web App, as specified by the baseline PWA Checklist.
Registers a Service Worker
Responds with a 200 when offline
Contains some content when JavaScript is not available
The page body should render some content if its scripts are not available.
User can be prompted to Install the Web App
Failures: Site does not register a Service Worker, Manifest start_url is not cached by a Service Worker.
View 7 passed items
Manual checks to verify
Performance

Resources

- How Twitter light was built: https://blog.twitter.com/official/en_us/topics/product/2017/introducing-twitter-lite.html
- How M.UBER was built: https://eng.uber.com/m-uber
- Financial times PWA: https://app.ft.com
- AliExpress PWA: https://m.aliexpress.com
- Preact: https://preactjs.com
- Preact-cli: https://github.com/developit/preact-cli