

Are Progressive Web Apps the Future of Web Development?



What are PWAs

(the developer's version)

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

What are PWAs

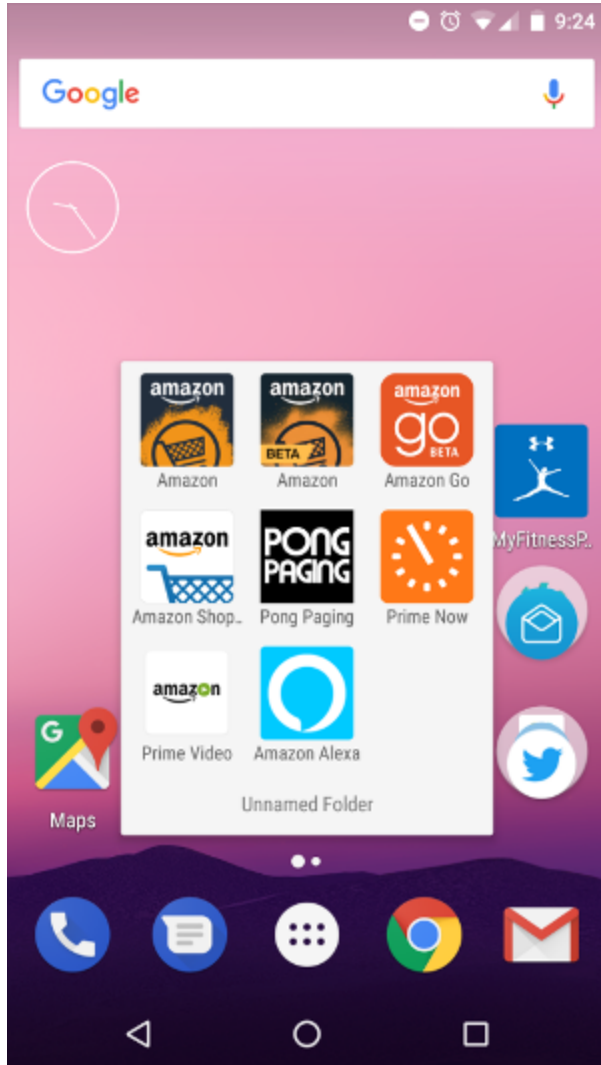
(the product manager version)

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



Show Case 1 - AliExpress

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

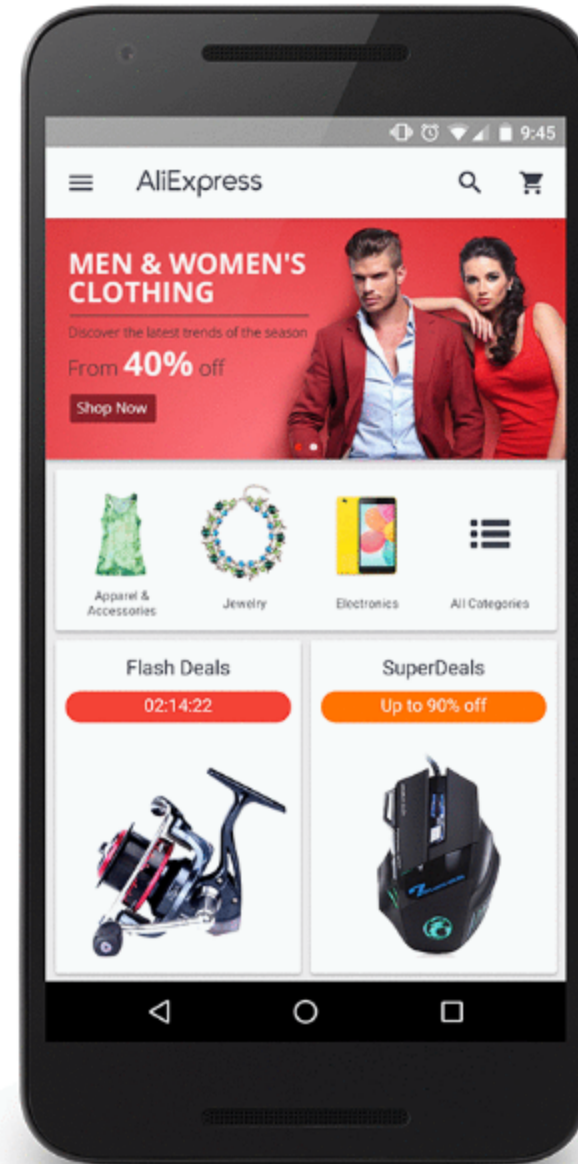
Results

- ✓ 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](#)

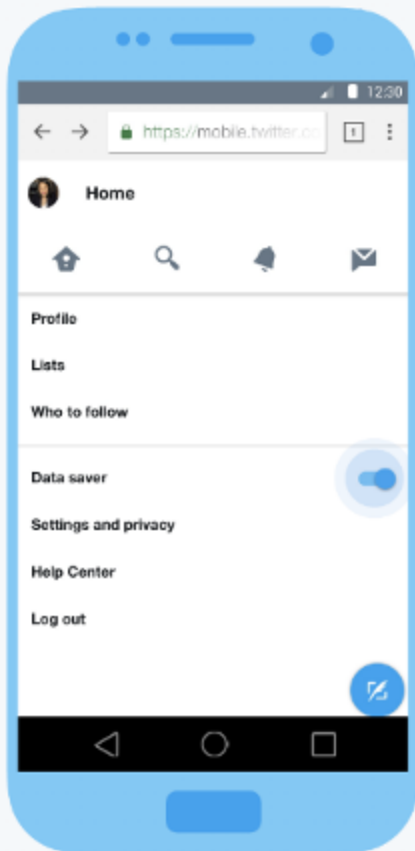
About AliExpress

"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

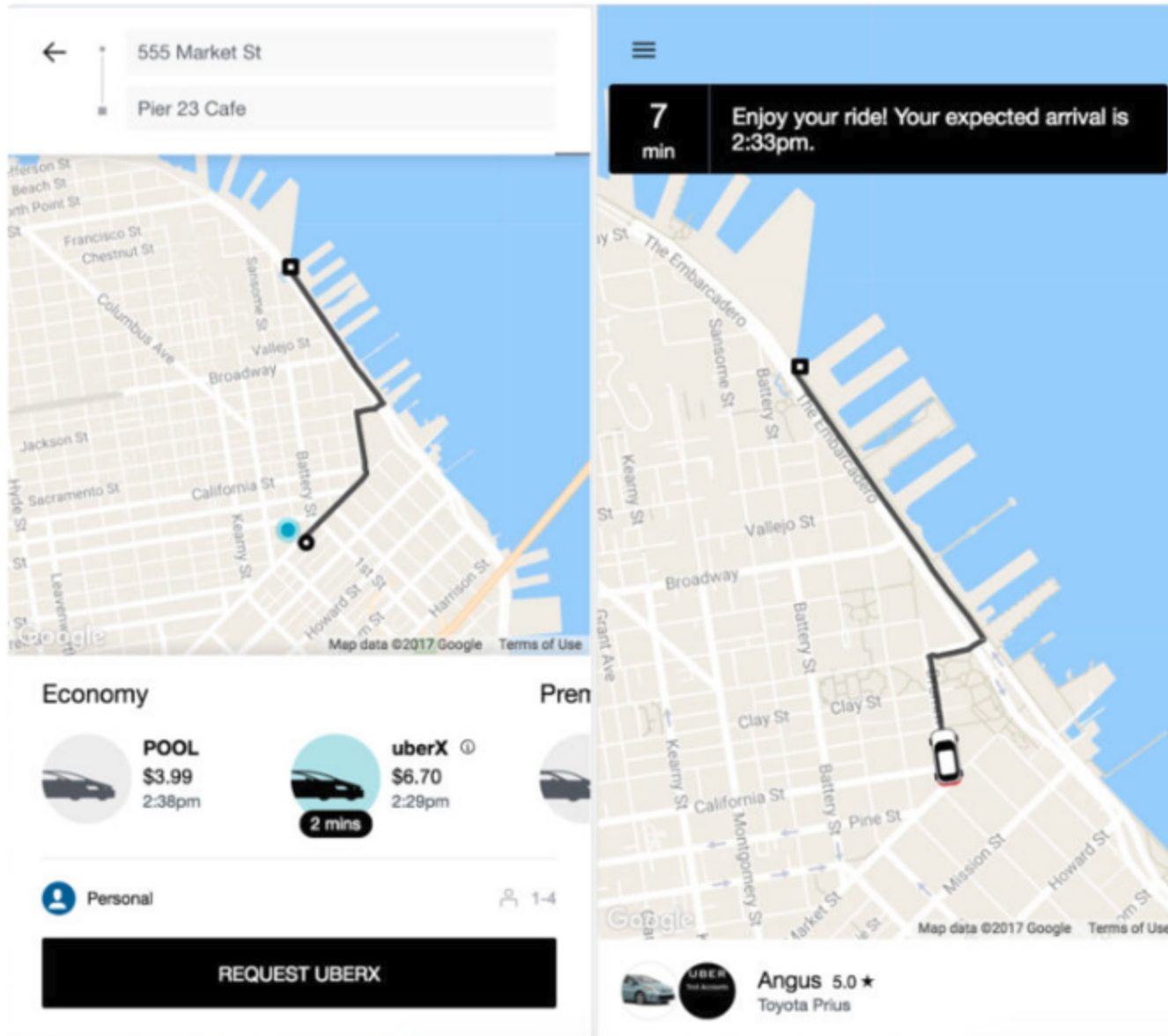
- 1 Tap your profile picture. Turn on the new “Data saver” setting.



2 Images will now appear blurred for preview. Tap on any image to load and view.



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 performance with the tool Lighthouse.
- Icon on home screen.
- (Android/Mozilla/IE) App-like 'loading' page, no URL, push notification and more.

Apple



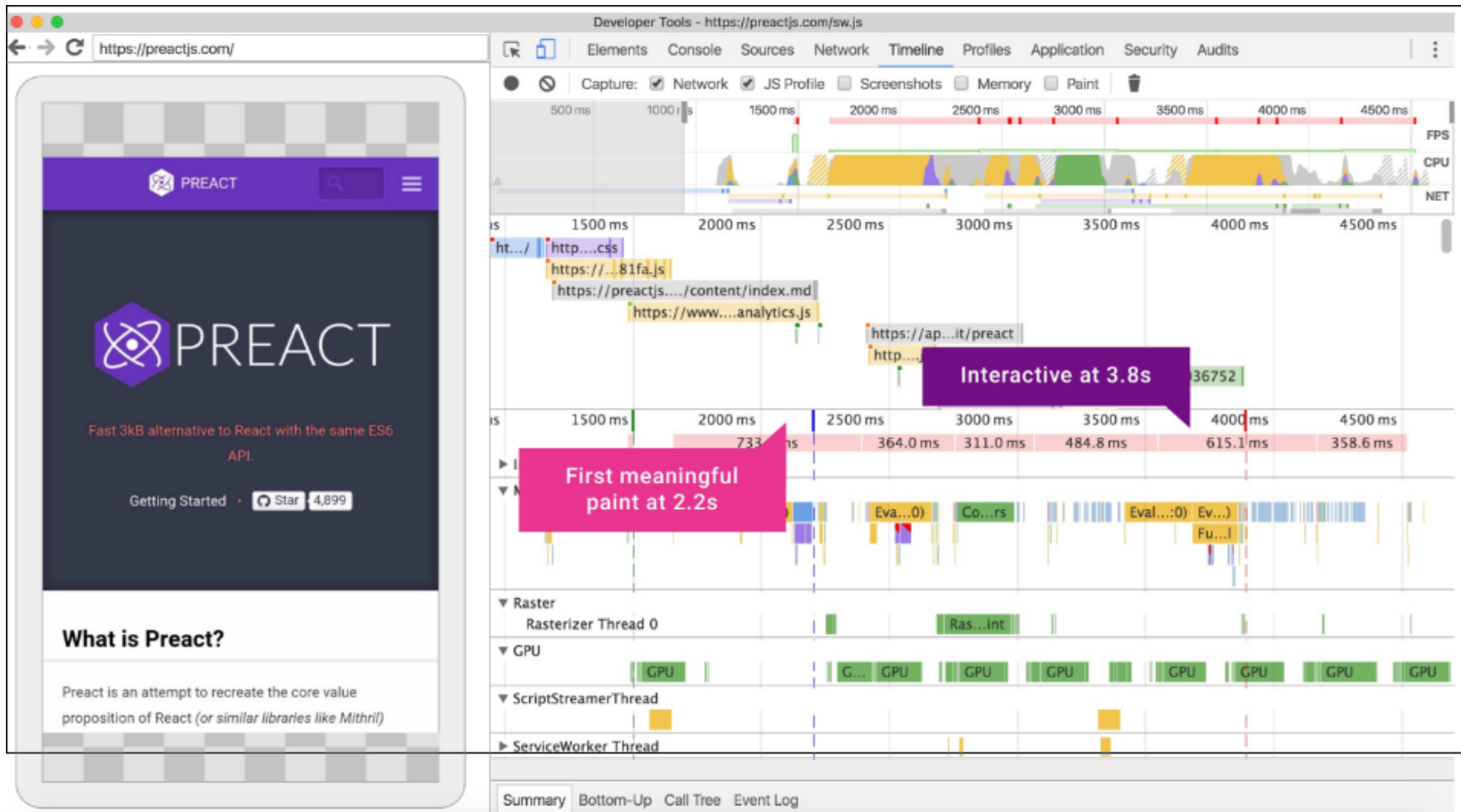
The PRPL Pattern

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

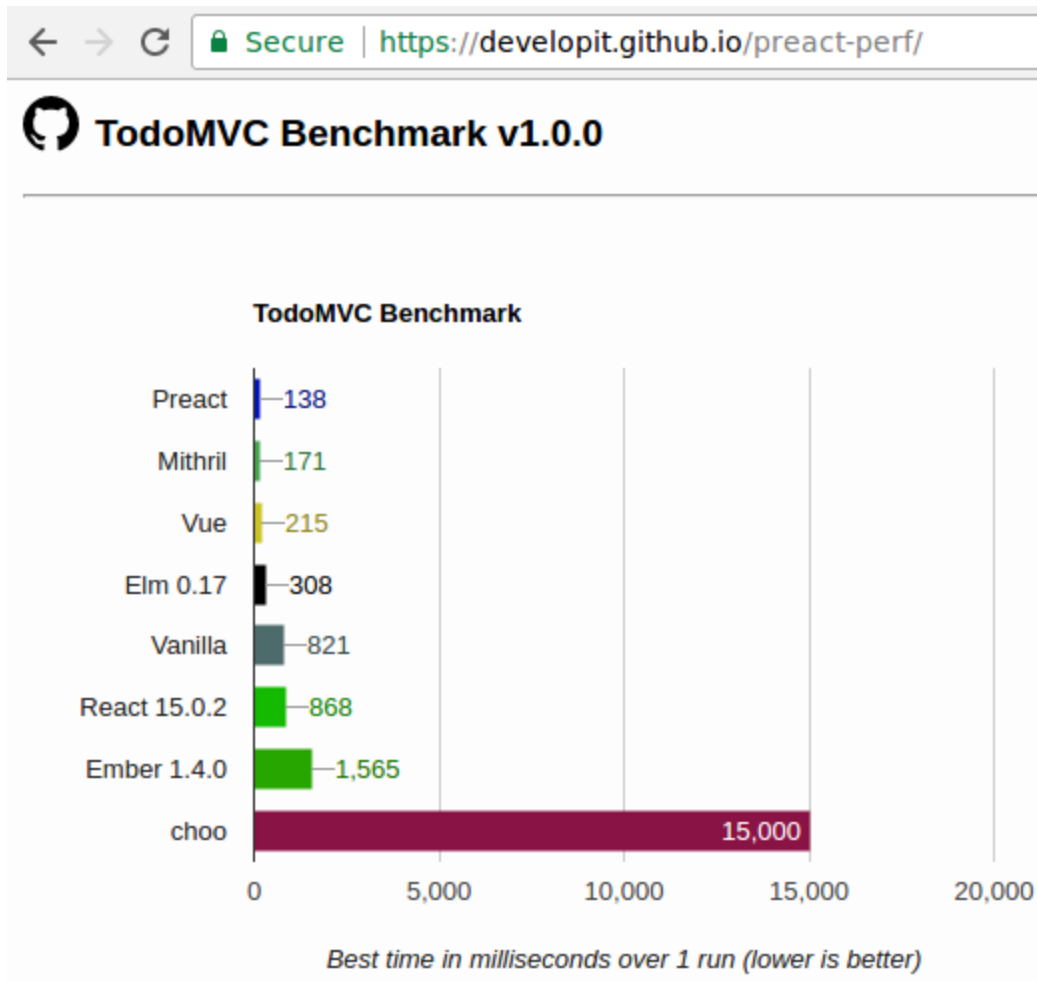
- Precache
- Render initial route
- Push server
- Lazy-load

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.

What are CSS Module?

index.js

```
import style from "../style"

render() {
  <div class={style.rounded}>
}
```

style.css (or LESS, Sass etc)

```
.rounded {
  display: block;
  background: #FFF;
  margin: 0px auto 0 auto;
  border-radius: 8px;
  padding: 10px;
}
```

<https://github.com/css-modules/css-modules>

What are Styled Components?

```
render(  
  <Title>  
    Hello World, this is my first styled component!  
  </Title>  
);
```

```
const Title = styled.h1`  
  font-size: 1.5em;  
  text-align: center;  
  color: blue;  
`;  
;
```

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://blipmdconlcpinefehnjammfjpmbjk/6ba5abf8-ef28-4c5d-8671-0ab889c77d59

Lighthouse
Version: 2.2.1

Progressive Web App64

Performance93

Accessibility100

Best Practices100

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

93

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>