

Progressive Web App Tooling: To the Lighthouse and Beyond

PROGRESSIVE WEB APP

ROADSHOW 2016 

Let's Go on a Journey

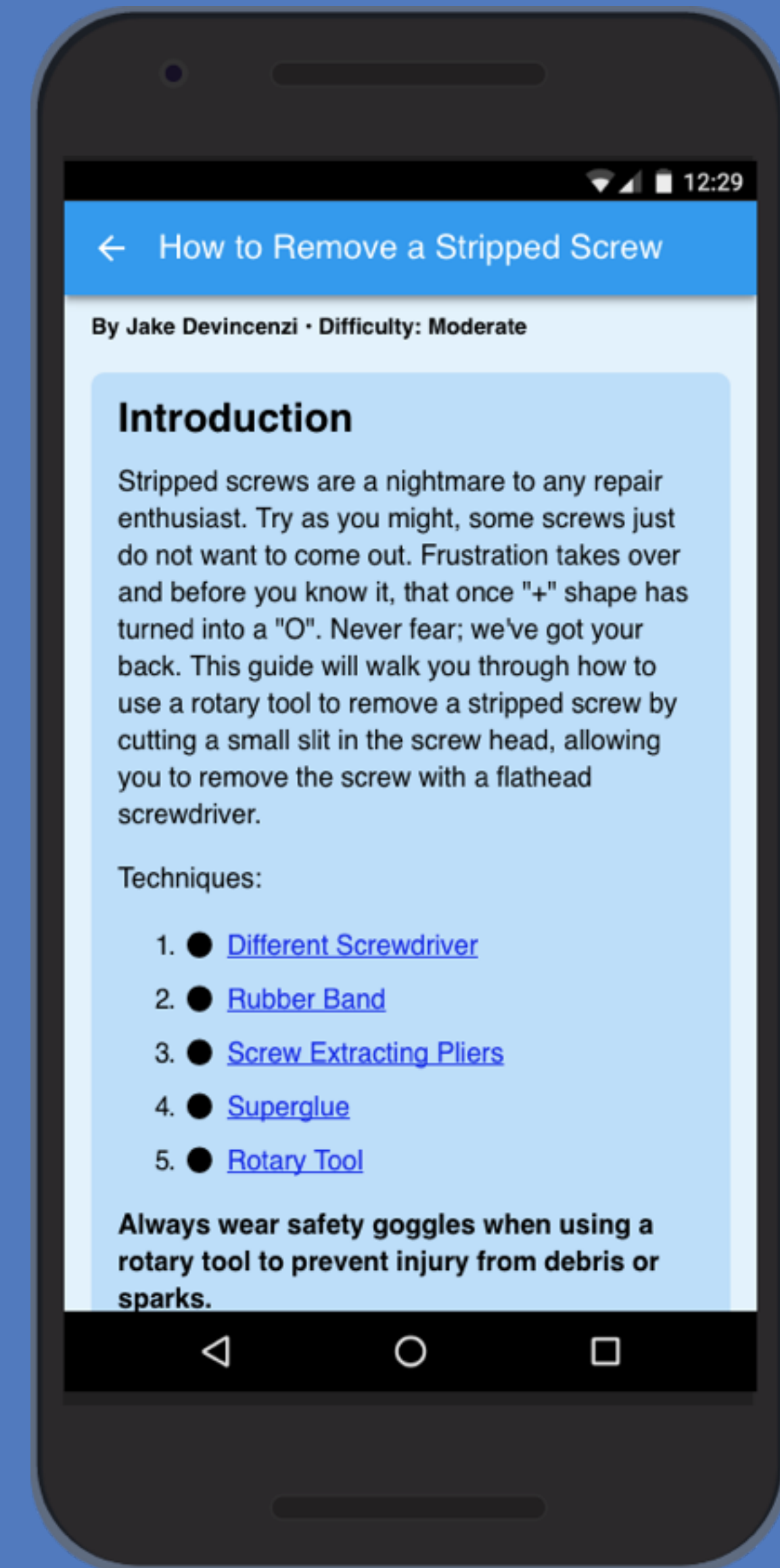
We'll transform a single page app
into a progressive web app.

Our Starting Point

Single page app, client-side render

Powered by the iFixit API

React for virtual DOM manipulation



Lighthouse



Lighthouse

offered by [lighthouse-extension-owners](#)

★★★★★ (7)

[Developer Tools](#)

2,209 users

ADDED TO CHROME



OVERVIEW

REVIEWS

SUPPORT

RELATED

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8

Lighthouse

<https://platform-status.mozilla.org/>

Progressive Web App

Best Practices

Progressive Web App

99 / 100

These audits validate the aspects of a Progressive Web App.

App can load on offline/flaky connections

Ensuring your web app can respond when the network connection is unavailable or flaky is critical to providing your users a good experience. This is achieved through use of a [Service Worker](#).

- Has a registered Service Worker
- URL responds with a 200 when offline
- Manifest's start_url is in cache storage for offline use (Coming soon)

Yes

Yes



Page load performance is fast

Users notice if sites and apps don't perform well. These top-level metrics capture the most important perceived performance concerns.

- First meaningful paint (target value: 1,000ms)
- Speed Index (target value: 1,000)
- Content scrolls at 60fps (Coming soon)

100 (1019.19ms)

85 (2660)



Compatible with your device

Lighthouse

<https://github.com/GoogleChrome/lighthouse>

[Website](#)

[Report Abuse](#)

Additional Information

Version: 1.1.2

Updated: August 9, 2016

Size: 703KiB

Language: English

Use Lighthouse
to Establish a Baseline

goo.gl/S07woZ

```
$ node lighthouse-cli/index.js https://ifixit-pwa.appspot.com/
```

Lighthouse results: <https://ifixit-pwa.appspot.com/>

Name: Progressive Web App

Description: These audits validate the aspects of a Progressive Web App.

App can load on offline/flaky connections: 100%

- Has a registered Service Worker: true

- URL responds with a 200 when offline: true

Page load performance is fast: 99%

- First meaningful paint: 100 (948.8ms)

- Speed Index: 98 (1283)

 - First Visual Change: 982ms

 - Last Visual Change: 1775ms

- Content scrolls at 60fps: `~_(\`ツ)_/~`

- Touch input gets a response in < 150ms: `~_(\`ツ)_/~`

... & more ...

Lighthouse: Fantastic Tool

...but not a destination!

Opportunities for Improvement

- Server-side rendering
- Service worker
- Web app manifest

Progressive Web App

21 / 100

These audits validate the aspects of a Progressive Web App.

App can load on offline/flaky connections

Ensuring your web app can respond when the network connection is unavailable or flaky is critical to providing your users a good experience. This is achieved through use of a [Service Worker](#).

- Has a registered Service Worker
- URL responds with a 200 when offline
- Cache contains start_url from manifest

No

No

No

Page load performance is fast

Users notice if sites and apps don't perform well. These top-level metrics capture the most important perceived performance concerns.

- First meaningful paint (target: 1,600ms)

(2747.9ms) 77

Server-side rendering

Improves time to first paint.

Content no longer depends on JavaScript.

See What Changed:

goo.gl/a6P8z3

Confirm in Lighthouse &
Various Browsers

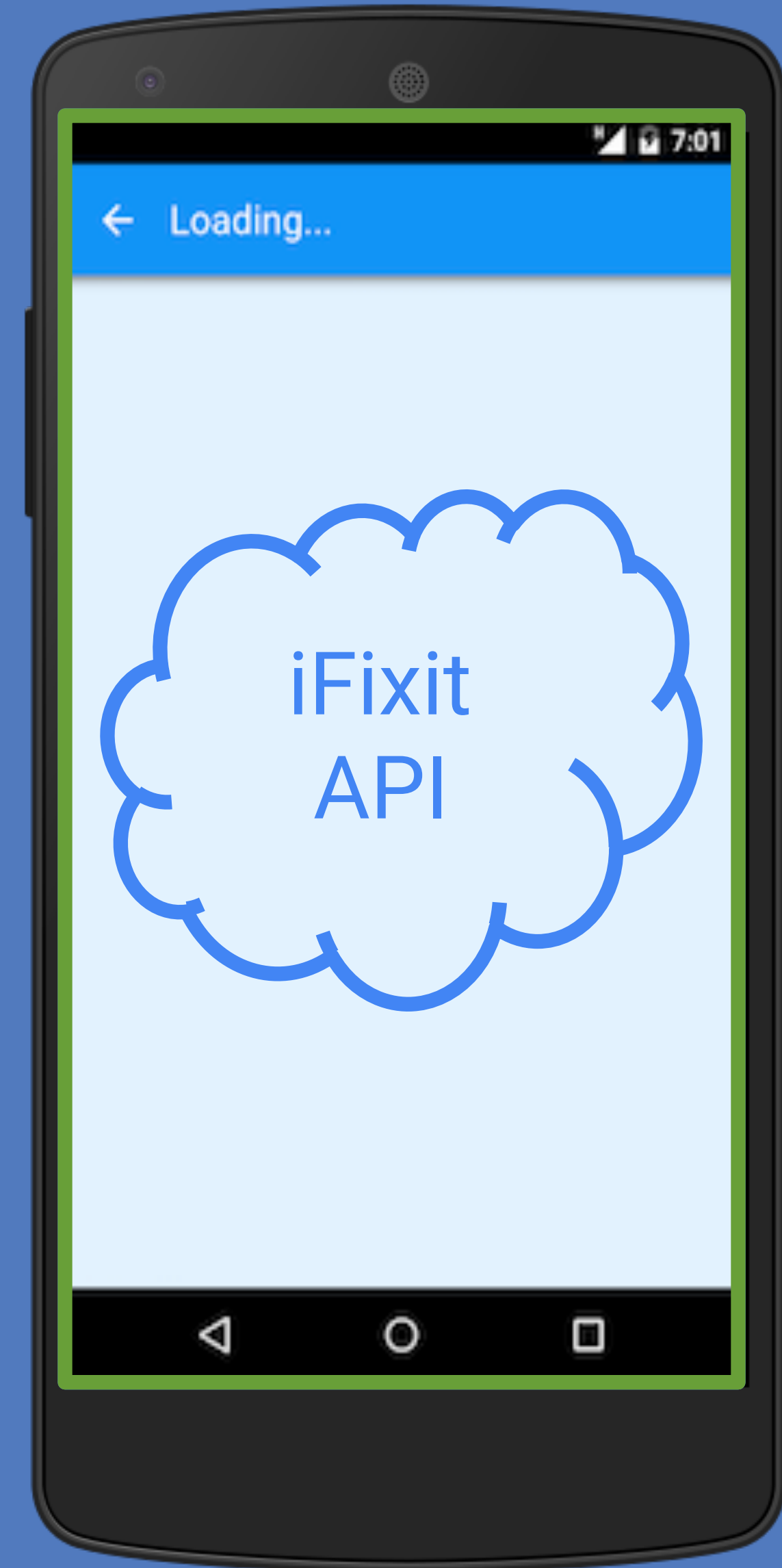
Adding a Service Worker

Make it work offline







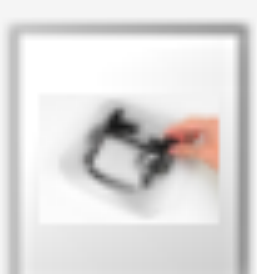



Remember:

**Treat service workers as
progressive enhancement!**

We're using the
App Shell +
dynamic content
model.



Know your network traffic!

Name Path	Me...	Status Text	Initiator	Size Content	Time Latency	Timeline – Sta
 dFehAI2SRQC2hnrY.stan... d3nevzfk7ii3be.cloudfront...	GET	200 OK	<u>(index):12</u> Parser	15.7 KB 15.2 KB	113 ms 113 ms	
 5Zbcawuyl1eUiuw4.stand... d3nevzfk7ii3be.cloudfront...	GET	200 OK	<u>(index):12</u> Parser	35.3 KB 34.8 KB	155 ms 67 ms	
 qWOHtBmCQpUvHckS.st... d3nevzfk7ii3be.cloudfront...	GET	200 OK	<u>(index):12</u> Parser	12.2 KB 11.8 KB	52 ms 51 ms	
 ePEj1IJOPyc1FBfN.standard d3nevzfk7ii3be.cloudfront...	GET	200 OK	<u>(index):12</u> Parser	16.5 KB 16.0 KB	62 ms 62 ms	
 Fu1ZajDHPheFtmen.stand... d3nevzfk7ii3be.cloudfront...	GET	200 OK	<u>(index):12</u> Parser	7.7 KB 7.3 KB	43 ms 43 ms	



See What Changed:

goo.gl/4CJLMj

Confirm in Lighthouse &
Various Browsers

The Dev Tools Application Pane

All your service worker debugging in one



Elements

Network

Application

Sources

Console


Timeline


>>


⋮

✕


Application


 Manifest


 **Service Workers**

 Clear storage

Storage

 Local Storage

 Session Storage

 IndexedDB

Service Workers

☐ Offline ☐ Update on reload ☐ Bypass for network ☐ Show all

http://localhost:8080/

[Update](#) [Push](#) [Unregister](#)

Source

[service-worker.js](#)

Received 8/12/2016, 4:12:44 PM

Status

#0 activated and is running [stop](#)

Clients

http://localhost:8080/ [focus](#)

Add a Web App Manifest

Provides useful Add to Homescreen metadata.

Don't forget about carefully chosen `<meta>` tags!

manifest.json

```
{  
  "name": "The Washington Post",  
  "short_name": "Wash Post",  
  "icons": [{  
    "src": "icon-48x48.png",  
    "sizes": "48x48",  
    "type": "image/png"  
  }, { ... }],  
  "start_url": "/index.html",  
  "display": "standalone",  
  "orientation": "portrait",  
  "background_color": "#000000",  
  "theme_color": "#000000"  
}
```



See What Changed:

goo.gl/dpwRa6

Confirm in Lighthouse &
Various Browsers

The Journey Continues

Lighthouse can guide you along

Links and such

- **iFixit Client Sample Code**
goo.gl/4EhFAC
- **Lighthouse Project Page**
goo.gl/A6pBhj
- **Instant Loading with Service Workers**
youtu.be/jCKZDTtUA2A
- **Progressive Web App Code Labs**
goo.gl/Bxdx99

Thank You!

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