Building modern progressive web apps with Polymer
@d_danailov
Topics Today

- What exactly are Progressive Web Apps?
- Tools and Libraries for Progressive Web Apps
- Polymer overview
- Building modern progressive web apps with Polymer
- There’s no silver bullet
What exactly is a Progressive Web App?
Radically improving web user experience
Progressive - Works for every user, regardless of browser choice because it's built with progressive enhancement as a core tenet.
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<td>Linkable</td>
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Reasons For Not Using Mobile Retail Apps Among US Consumers 2016

- I like using the website better: 53%
- I’m concerned about security: 31%
- Apps take up too much space on my mobile device: 28%
- Do not want to download a separate app for each retailer: 19%
- I’m not very comfortable with the technology: 17%
- I tried but it didn’t work or was hard to use: 10%
- I’m concerned that the app does not offer the complete store experience: 9%
- The retailers I buy from do not have apps: 3%

Source: UPS, n=5,330
A Beginner’s Guide To Progressive Web Apps
By Kevin Farrugia
August 11th, 2016
Apps, Service Workers, Web apps
24 Comments

Today, too many websites are still inaccessible. In our new book inclusive Design Patterns, we explore how to craft flexible front-end design patterns and make future-proof and accessible interfaces without extra effort. Hardcover, 312 pages. Get the book now!

Advertisement

Google’s Progressive Web Apps are blurring the lines between apps and the mobile web
BI Intelligence © Aug. 8, 2016, 1:00 PM 1,976

Reasons For Not Using Mobile Retail Apps Among IS Consumers 2016

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<th>Reason</th>
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<tr>
<td>I think I’ll only buy from those that don’t have apps</td>
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This story was delivered to BI Intelligence Apps and Platforms Briefing subscribers. To learn more and subscribe, please click here.

The line between a mobile app and the mobile web is becoming increasingly blurred. And Progressive Web Apps (PWA), the latest open-source technology native to the mobile web, promise to revolutionize the mobile web experience.

MarTech Landscape: What are Progressive Web Apps?
According to a leading developer: They’re the “biggest thing to happen to the mobile web since the iPhone.”

Bobby Levine on October 28, 2016 at 11:28 am
Housing.com: User Acquisition Costs

- Android App: $3.75
- Mobile Web: $0.07

1 vs 53
17 000+ developers across 35+ countries
"МОМЧЕ, КАК ДА ГО СВЪРЖА?"
НАГЛЕДНО ИНСТАЛИРАНЕ НА ДЕКОДЕР
sw-precache

Build-time precaching for static assets

github.com/GoogleChrome/sw-precache
sw-toolbox

Runtime caching strategies & expiration

github.com/GoogleChrome/sw-toolbox
Web Starter Kit
Boilerplating & Tooling for Multi-Device Development

Download Kit (beta)
modules with dependencies

webpack

MODULE BUNDLER

static assets

.js

.png

.js

.js

.png

.css
Progressive Web App

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](https://developer.mozilla.org/en-US/docs/Web/API/ServiceWorker).

- Has a registered Service Worker
  - No active service worker found for this origin.
- URL responds with a 200 when offline

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: **20480.3ms** (target: 1,600ms)
- Perceptual Speed Index: **38999** (target: 1,250)
  - First Visual Change: **38291ms**
  - Last Visual Change: **42202ms**
- Estimated Input Latency: **962.8ms** (target: 50ms)
  - Primarily a measure of the main thread’s activity. There is a 90% probability a user would encounter input latency of this amount or less. 10% of touches can expect additional latency.
- Time To Interactive (alpha): **20480.3ms** (target: 5,000ms)
  - Content scrolls at 60fps (Coming soon)
  - Touch input gets a response in < 150ms (Coming soon)
  - App is interactive without jank after the first meaningful paint (Coming soon)
Framework Layers

- Routes match URLs and apply Handlers
  - RegExpRoute
  - ExpressRoute
  - ... and more!
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  - … and more!

- Called by Route, or used in your own code (*Caching strategies*)
  - StaleWhileRevalidate
  - NetworkFirst
  - … and more!
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- Custom callbacks for network & caches
  - requestWillFetch (Custom Action)
  - fetchDidFail (Custom Action)
  - cacheDidUpdate (Custom Action)
Traditional

Browser Request

Web API

Server
Progressive web apps (PWA)
Polymer overview
Web Components
2014 - Polymer 0.5 (Developer preview)

2015 - Polymer 1.0

2016 and 2017 - Polymer 2.0
500 + projects

6,000+ elements
Polymer vs Angular vs React: Which is leading the future of web apps?

October 10, 2016 by Dimitar Densilev

Most developers and users won’t argue building on and maximizing the experiential capabilities of the modern web has been a slow process. When scopes a development project, clients have historically asked for native solutions citing better, more reliable performance. All that is changing, and Polymer, the open-source JavaScript library created by front-end developers working with Chrome, is making it easier to design web experiences that feel more responsive and native than ever before.
My first component

Picture-frame.html

```html
<link rel="import" href="https://polygit2.appspot.com/components/polymer/polymer/polymer.html">
<dom-module id="picture-frame">
  <template>
    <style>
      :host { display: block; }
    </style>
    <h1>Hello jstalks</h1>
    <!-- any children are rendered here →
    <content></content>
  </template>
  <script>
    Polymer({ 'is': 'picture-frame' })
  </script>
</dom-module>

<picture-frame>
  <img src="jstalks.png" alt="jstalks" />
</picture-frame>
```
Polymer Github Lines of Code
4x more HTML, CSS, JSON, Markdown
10x less JavaScript

Image Source: Polymer Summit 2016
Building modern progressive web apps with Polymer
The PRPL Pattern

Push **components** for initial route

Render **the initial route asap**

Pre-cache **components** for remaining routes

Lazy-load **& create next routes on-demand**

Polymer Summit 2016 is all over! But you can still
Watch the videos or Try a codelab at home.

Join us for two days of talks, codelabs, and breakout sessions from the Polymer team, Googlers, major companies using Polymer and Web Components.
THERE'S NO SILVER BULLET
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Source: UPS, n=5,330
HTTP/2 comes to Firebase Hosting

September 21, 2016

Today we're excited to announce the availability of HTTP/2 on Firebase Hosting. HTTP/2 is a new version of the HTTP protocol that is already supported by 77% of browsers worldwide. It offers some exciting advantages for web developers:

- Multiple requests can be sent over a single connection. With HTTP/2, it's less necessary to concatenate resources together.
- It's a binary protocol, which means headers can be compressed and data can generally be sent more efficiently.
- Servers can proactively "push" content to clients.
Thanks for attending Firebase Dev Summit 2016!

Check out the full playlist of all our recordings and read a recap of the keynote.
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How I learned to stop worrying and love the Polymer toolbox (Polymer Summit 2016)
#UseThePlatform
Resources
https://goo.gl/A4w47C
MyTeletouch your phone as TV-PC wireless keyboard

Help us bring MyTeletouch to life (wireless mouse, keyboard and joystick from your phone)

Julian Sapundzhiev
Varna, Bulgaria
About

$276 USD raised by 8 backers

6% of $5,000 flexible goal

2 months left

BACK IT
Questions