

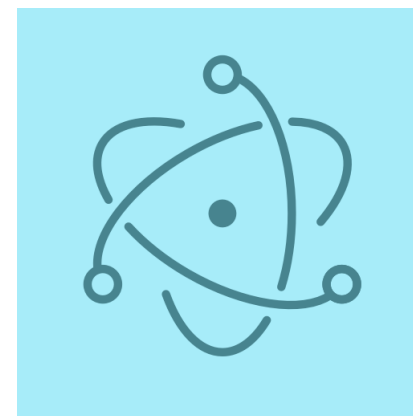
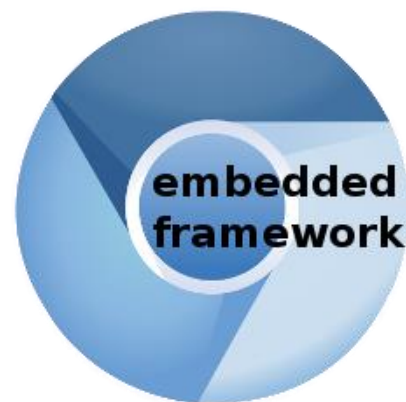


# The Future of Upcoming Web Development?



Progressive Web Apps

<http://www.evolutionoftheweb.com/>



# WWW base principles

- URLs and links as the core organizing system: if you can't link to it, it isn't part of the web
- Markup and styling for accessibility, both to humans and search engines
- UI Richness and system capabilities provided as additions to a functional core
- Free to implement without permission or payment, which in practice means standards-based



Alex Russel, Google software engineer



Frances Berriman , freelancer

# Progressive Web Apps

## **Progressive**

Work for every user, regardless of browser choice because they're built with progressive enhancement as a core tenet.

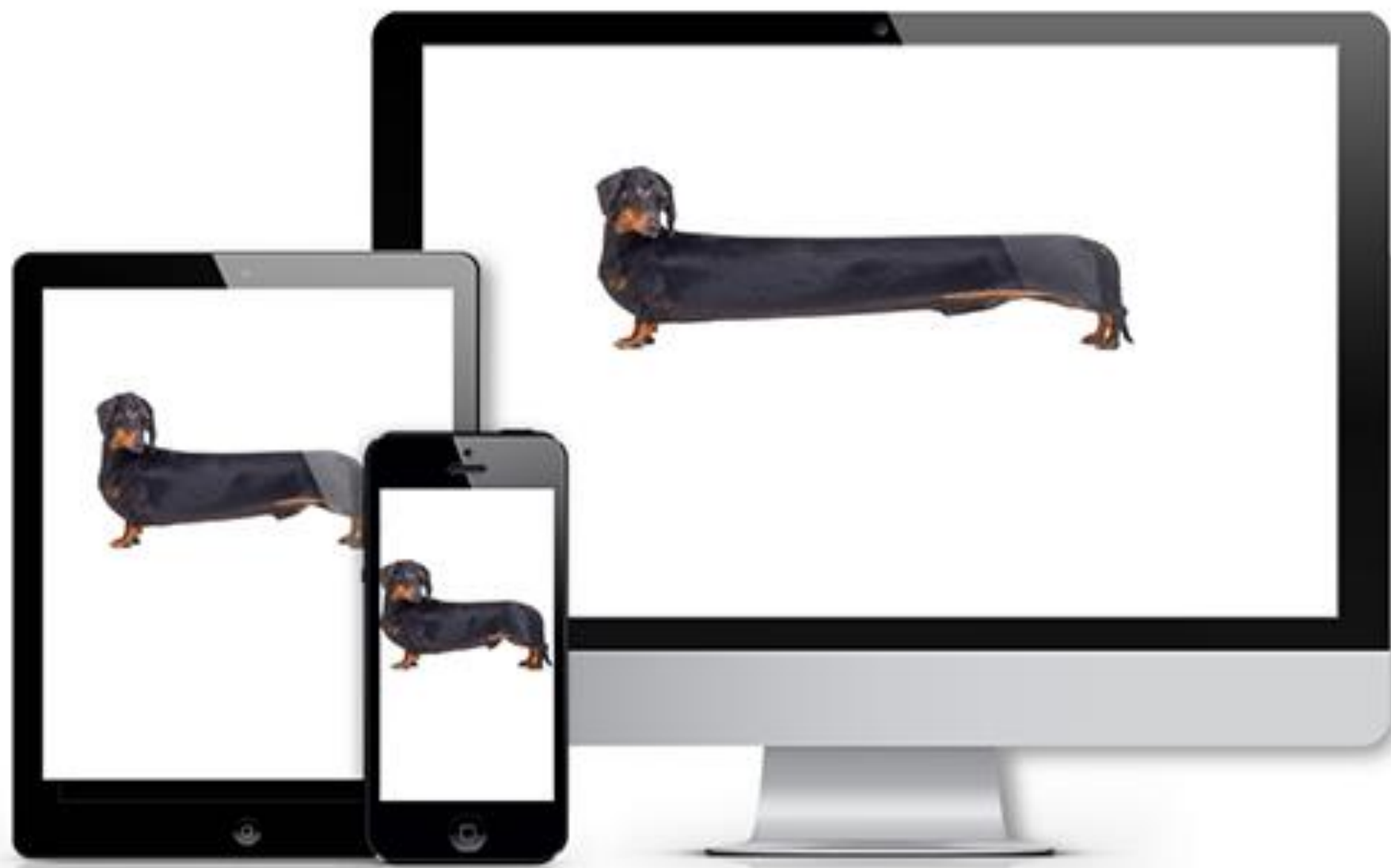


# Progressive Web Apps

## **Responsive**

Fit any form factor: desktop, mobile, tablet, or whatever is next.





# Progressive Web Apps

## **Connectivity independent**

Enhanced with service workers to work offline or on low quality networks.



**OH, HELLO!**



**I SEE YOU ARE  
ENJOYING THE INTERNET**



**WOULDN'T IT  
BE A SHAME**



**IF SOMETHING WERE TO**



**HAPPEN**



**TO THE CONNECTION?**

# Progressive Web Apps

## **App-like**

Feel like an app to the user with app-style interactions and navigation because it's built on the app shell model.





# Progressive Web Apps

## **Fresh**

Always up-to-date thanks to the service worker update process.



# Progressive Web Apps

## **Safe**

Served via HTTPS to prevent snooping and ensure content hasn't been tampered with.





# Progressive Web Apps

## **Discoverable**

Are identifiable as “applications” thanks to W3C manifests and service worker registration scope allowing search engines to find them.





india buy mobile online



All

Images

News

Videos

Maps

More ▼

Search tools

About 135,000,000 results (0.50 seconds)

## Mobiles: Mobile Phones with Prices in India - Online ...

[www.snapdeal.com](http://www.snapdeal.com) › [Mobiles & Tablets](#) ▼

**Buy mobiles online:** Online mobile shopping store for branded **mobile** phones & offers at best prices in **India**. Check prices & user reviews. Shop for **mobiles** ...

## Mobiles Phones - Buy Mobile Phones Online at Best Price in ...

[www.flipkart.com/mobiles](http://www.flipkart.com/mobiles) ▼

**Buy Latest Mobile Phones Online** - Compare, **Buy Mobiles** phones at best Price In **India**. Check features and User Reviews. Free Shipping, Cash on delivery at ...

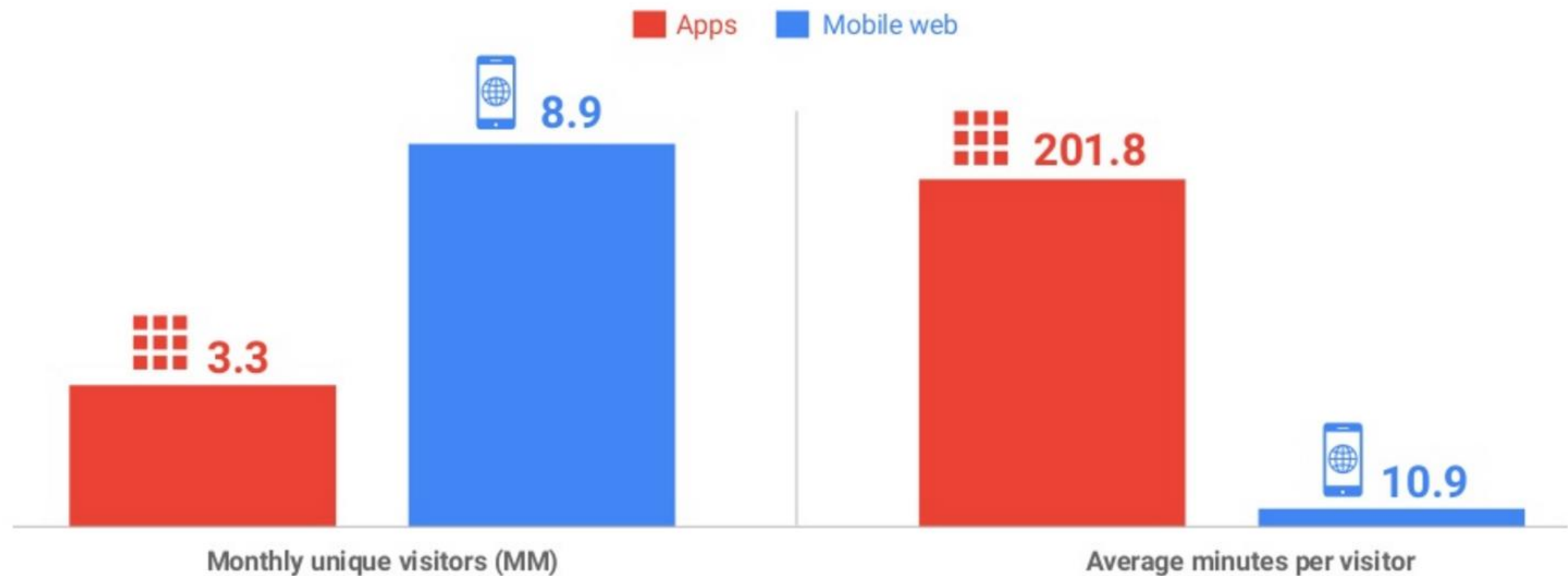
# Progressive Web Apps

## **Re-engageable**

Make re-engagement easy through features like push notifications.

# The web offers broader reach, but engagement is low

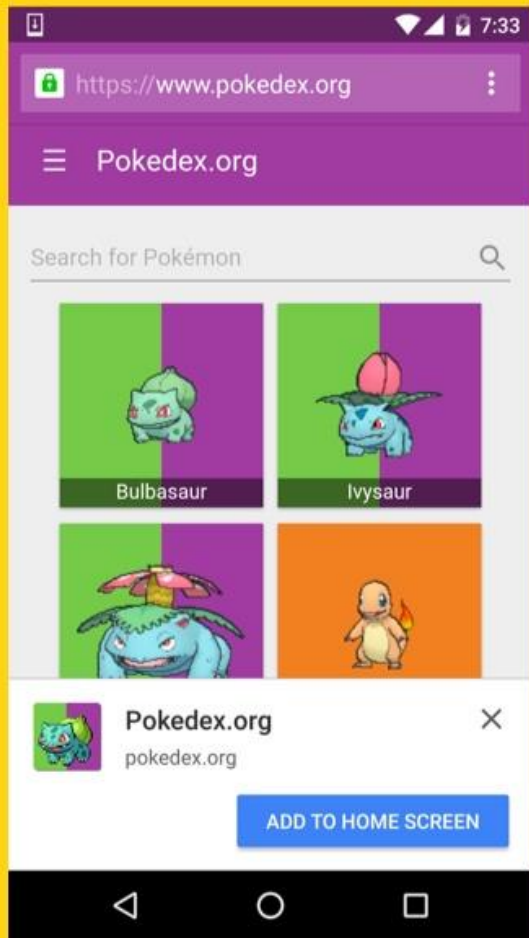
Top 1000 mobile apps vs. top 1000 mobile web properties



# Progressive Web Apps

## **Installable**

Allow users to “keep” apps they find most useful on their home screen without the hassle of an app store.



Web App install  
banner for engagement



Launch from user's  
home screen



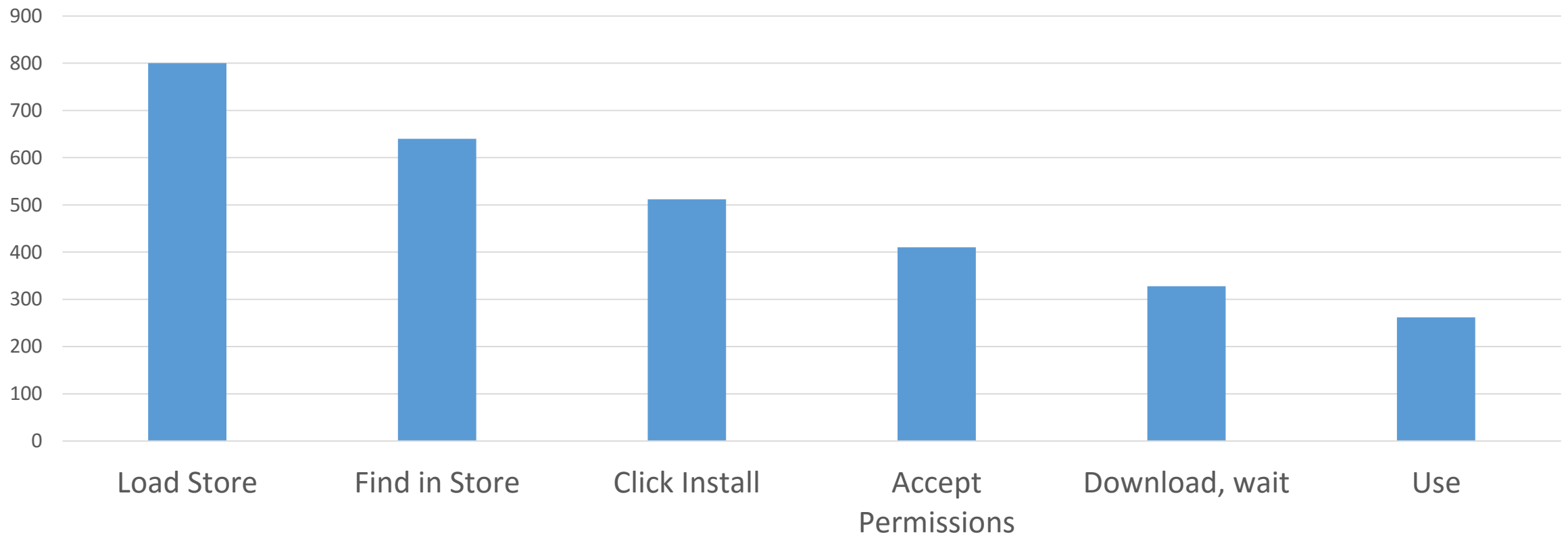
Splash screen  
(Chrome for Android 47+)



Works offline with  
Service Worker



In a consumer mobile app, **every step** you make a user perform before they get value out of your app **will cost you 20% of users.**



# Progressive Web Apps

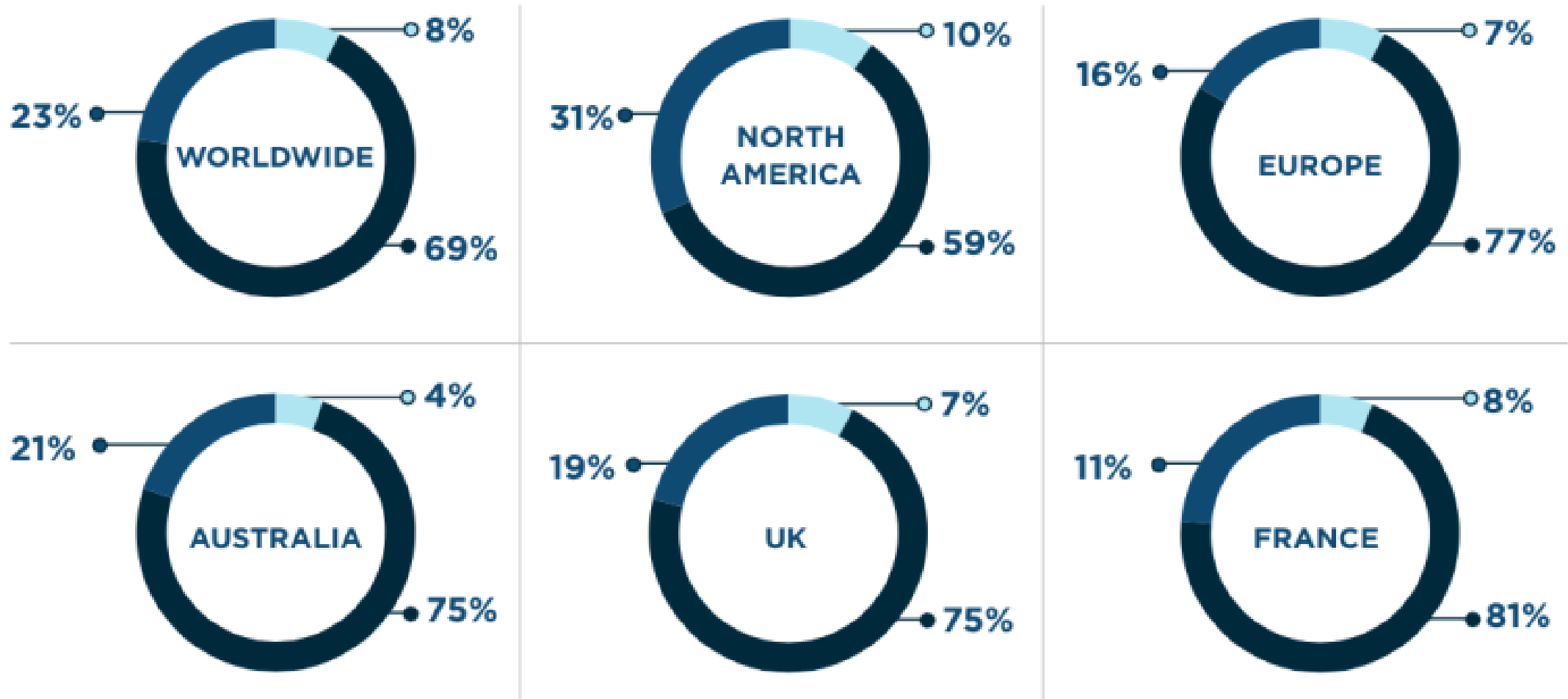
## **Linkable**

Easily share via URL and not require complex installation.

**FIGURE 5**

Percentage of shares by sharing channel

■ All Other Social   ■ Facebook   ■ Dark Social



Source: RadiumOne Post social data, August 1-28, 2014

# How to start developing Progressive Web App

# Web App Manifest

```
<head>
```

```
...
```

```
<link rel="manifest" href="manifest.json">
```

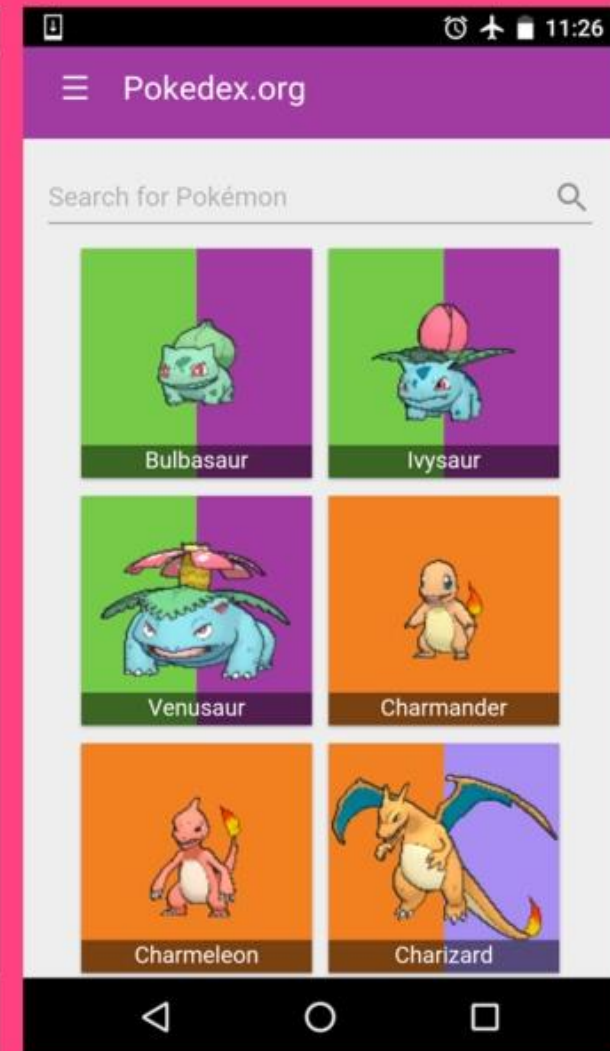
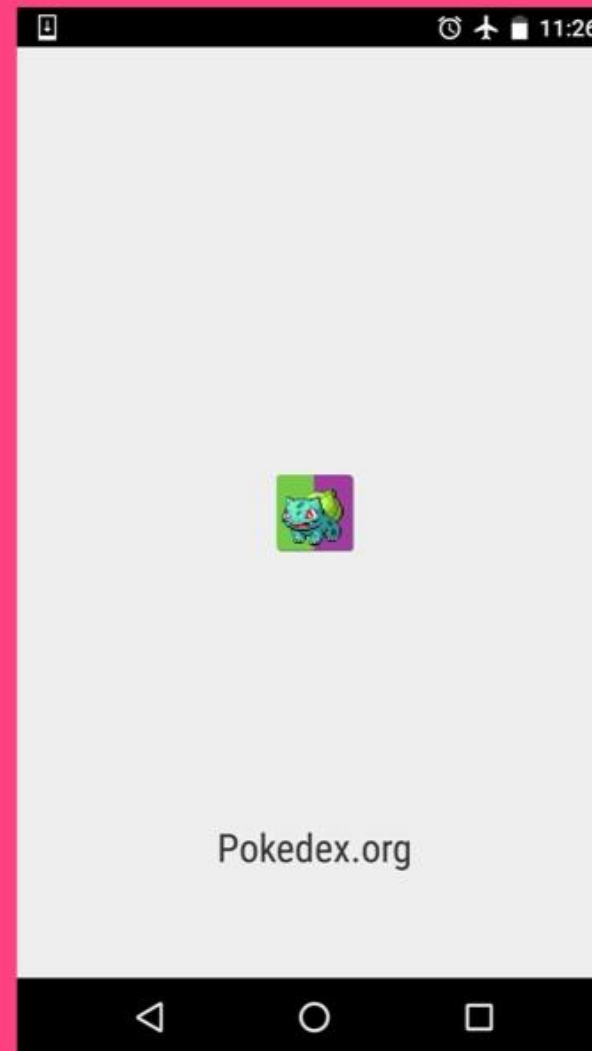
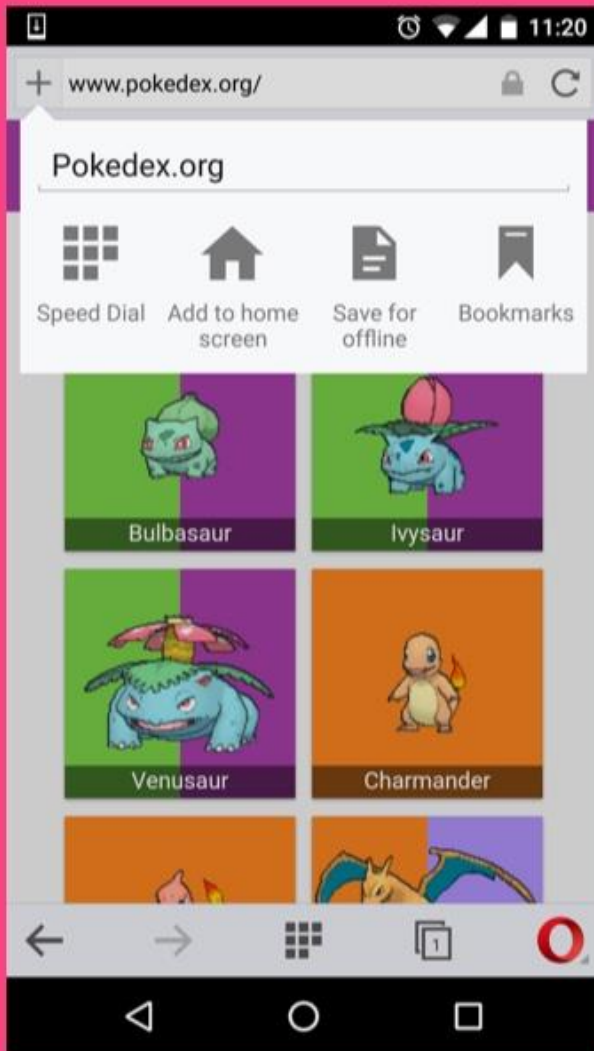
```
...
```

```
</head>
```

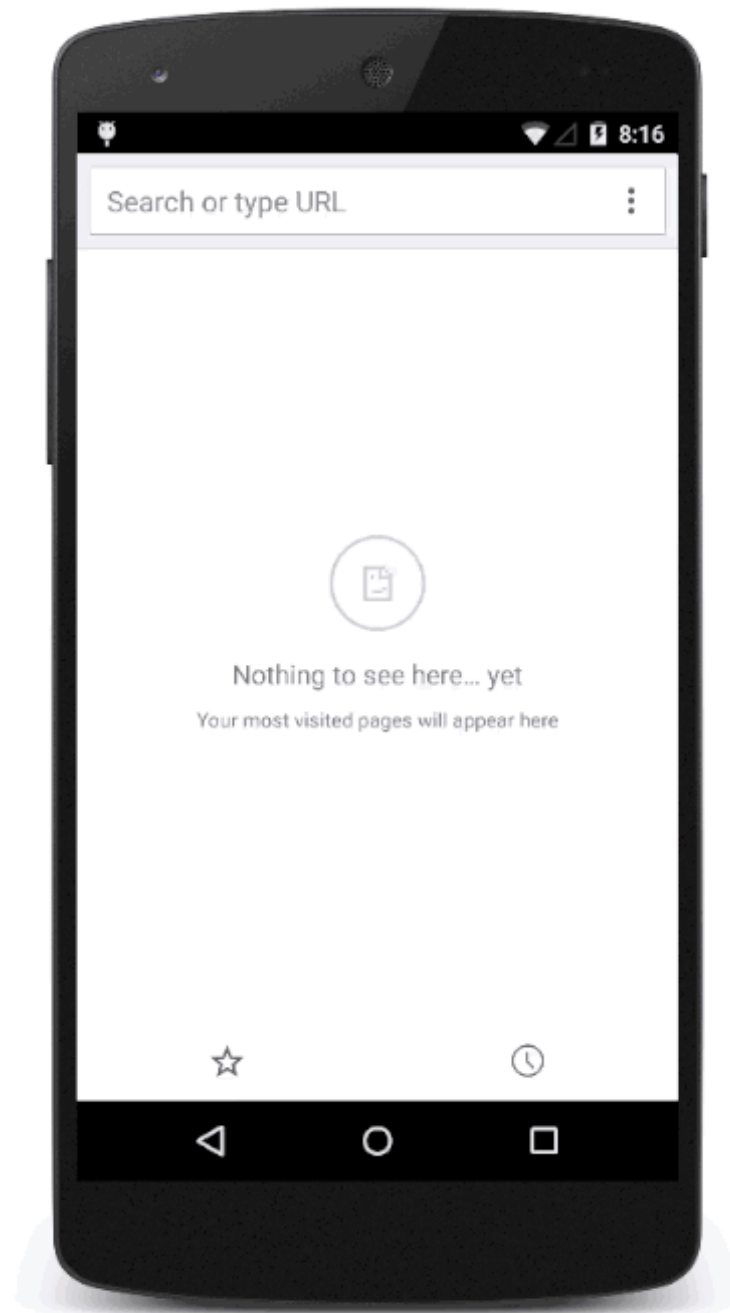
Content-Type: application/manifest+json

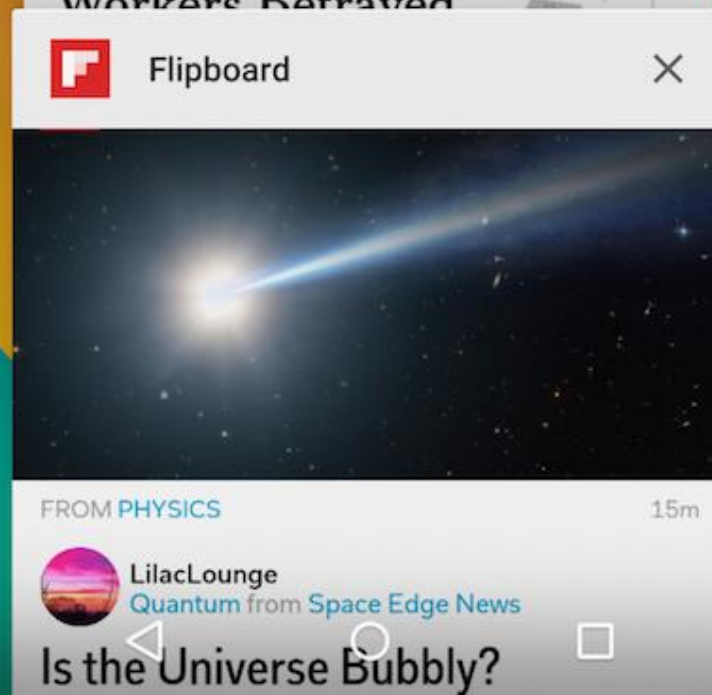
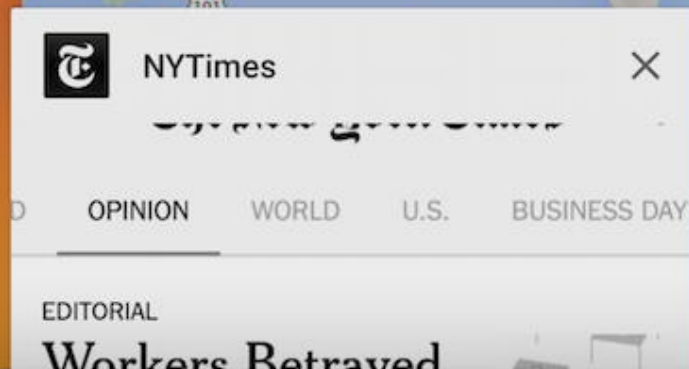


```
{  
  "short_name": "Pokedex.org",  
  "name": "Pokedex.org",  
  "display": "standalone",  
  "icons": [  
    {  
      "src": "img/icon-48.png",  
      "sizes": "48x48",  
      "type": "image/png"  
    }, ...  
  ],  
  "start_url": "index.html?launcher=true",  
  "theme_color": "#a040a0",  
  "background_color": "#EEEEEE"  
}
```



Progressive Web Apps in Opera on Android





# Service Worker

```
if('serviceWorker' in navigator) {  
    navigator.serviceWorker  
        .register('/sw.js')  
        .then(function() {  
            console.log("SWorker Registered");  
        });  
}
```

- ▶ Frames
- ▶ Web SQL
- ▶ IndexedDB
- ▶ Local Storage
- ▶ Session Storage
- ▶ Cookies
- ▶ Application Cache
- ▶ Cache Storage
- ⚙ Service Workers**

☐ Open DevTools window and pause JavaScript execution on Service Worker startup for debugging.

www.pokedex.org

Scope: / ⚙ 🔔

installing

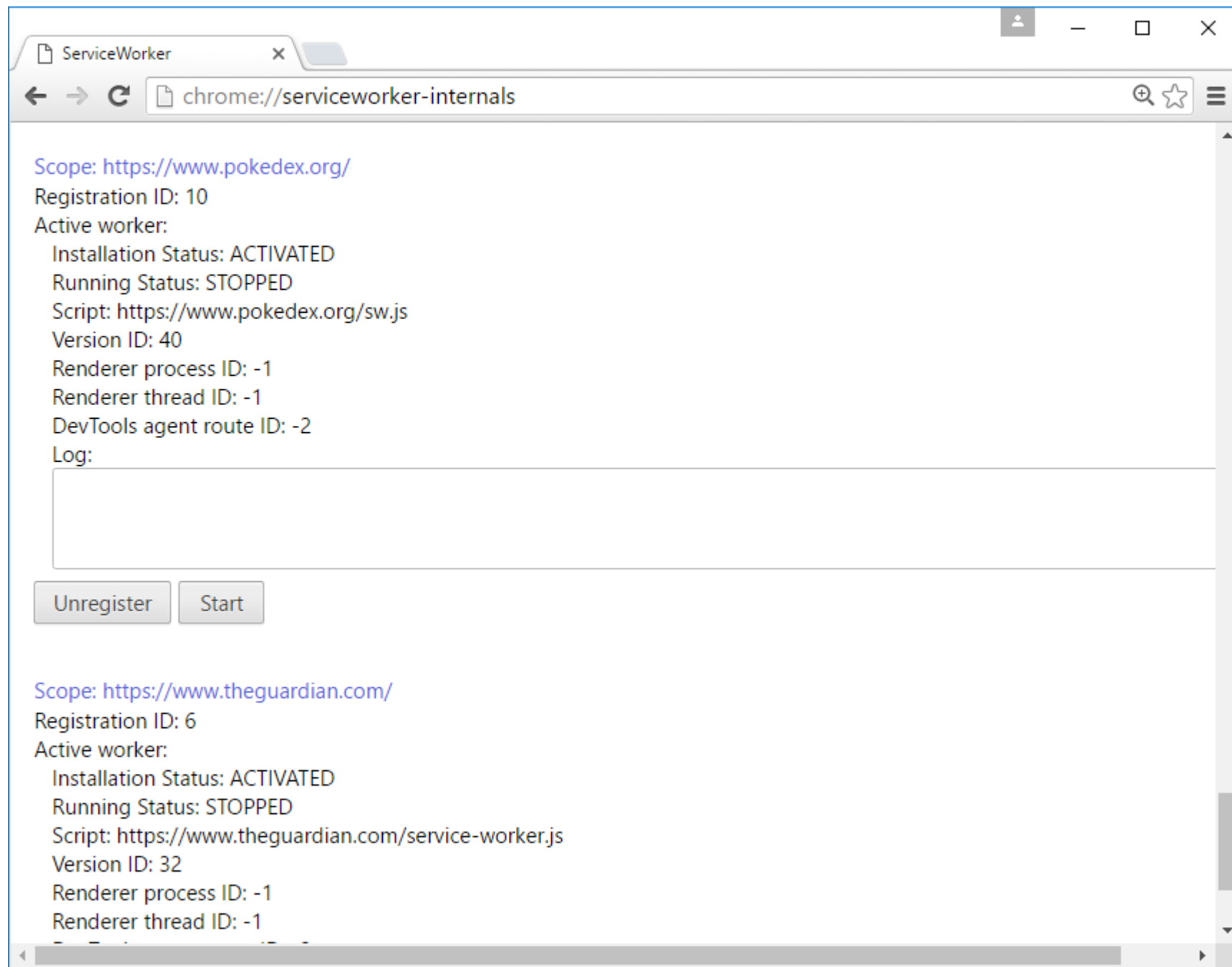
waiting

**active**

redundant

State	activated	Recent messages <ul style="list-style-type: none"><li>📘 Last-Modified: 2016-01-19 01:51:30.000</li><li>📘 Server response time: 2016-03-11 21:41:07.290</li></ul>
Worker	running <a href="#">inspect</a>	
Script URL	/sw.js	Controlled clients <ul style="list-style-type: none"><li>Tab: <a href="https://www.pokedex.org/manifest.json">https://www.pokedex.org/manifest.json</a> <a href="#">focus</a></li><li>Tab: <a href="https://www.pokedex.org/">https://www.pokedex.org/</a> <a href="#">focus</a></li></ul>
Updated	2016-03-11 21:41:07.290	
Last-Modified	2016-01-19 01:51:30.000	





```
var CACHE_NAME = "my_cache";
var urlsToCache = [
    '/index.html',
    '/css/style.css',
    '/js/script.js'
];
self.addEventListener('install', function (event) {
    event.waitUntil(
        caches.open(CACHE_NAME)
            .then(function (cache) {
                return cache.addAll(urlsToCache);
            })
    );
});
```

```
self.addEventListener('activate', function (event) {  
    event.waitUntil();  
});
```

```
self.addEventListener('fetch', function (event) {  
    event.respondWith(  
        caches.match(event.request)  
        .then(function (response) {  
            // Cache hit - return response  
            if (response) {  
                return response;  
            }  
            return fetch(event.request);  
        })  
    );  
});
```

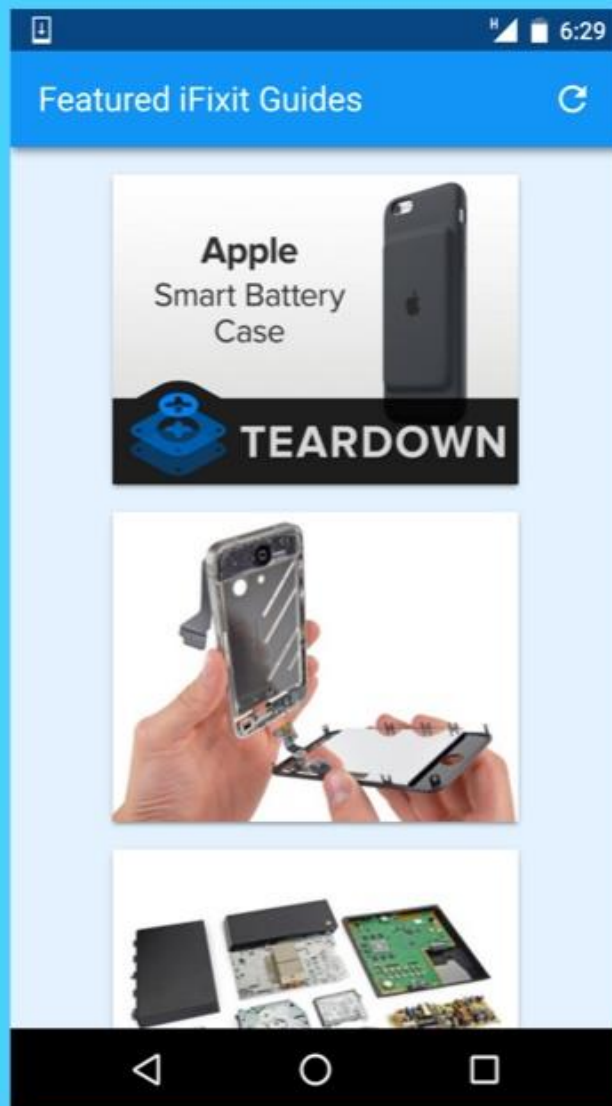
```
navigator.serviceWorker.ready.then(function (registration) {  
  registration.periodicSync.register({  
    tag: 'get-latest-news',           // default: ''  
    minPeriod: 12 * 60 * 60 * 1000, // default: 0  
    powerState: 'avoid-draining',     // default: 'auto'  
    networkState: 'avoid-cellular'   // default: 'online'  
  }).then(function (periodicSyncReg) {  
    // success  
  }, function () {  
    // failure  
  })  
});
```

```
self.addEventListener('periodicsync', function (event) {  
    if (event.registration.tag == 'get-latest-news') {  
        event.waitUntil(fetchAndCacheLatestNews());  
    }  
    else {  
        // unknown sync, may be old, best to unregister  
        event.registration.unregister();  
    }  
});
```

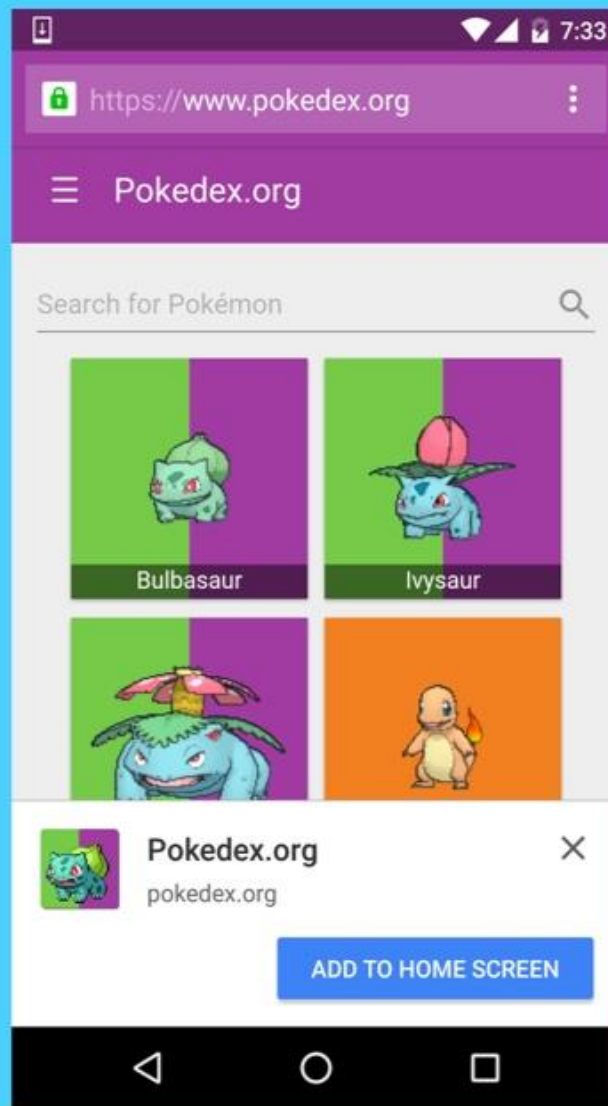




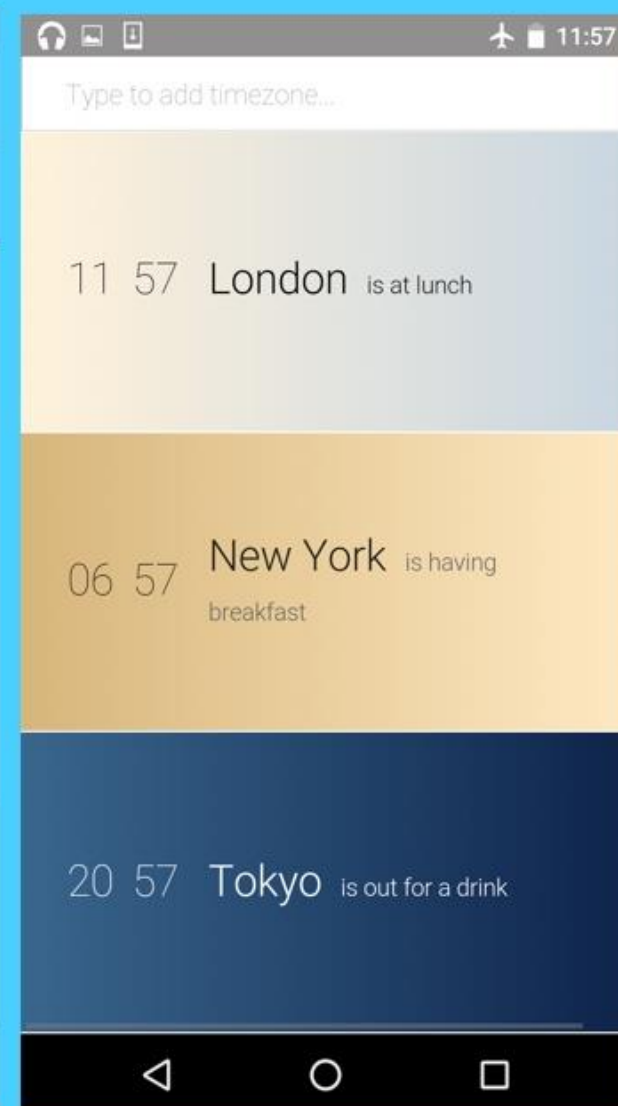
Polymer



React

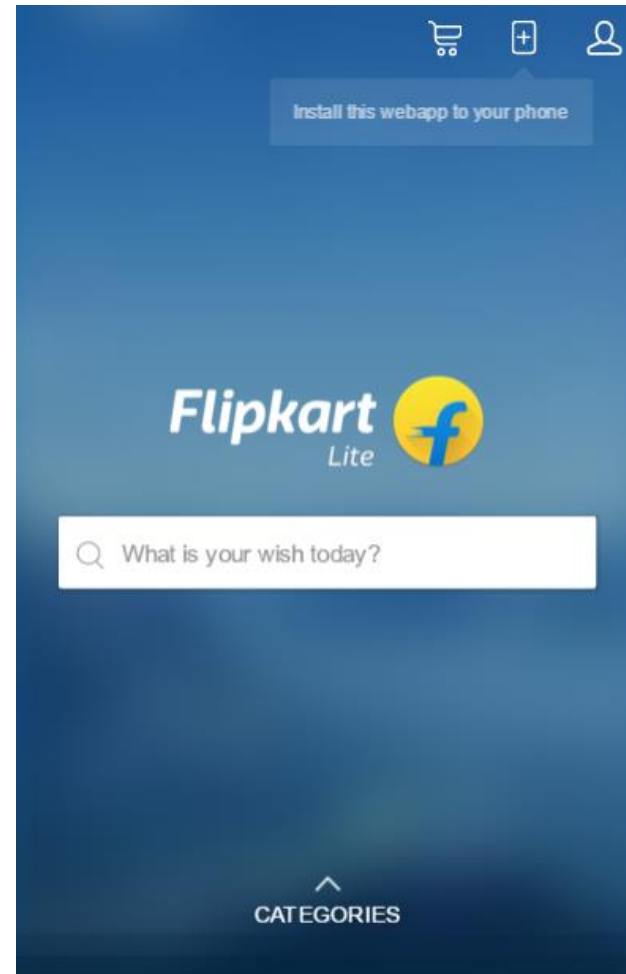


Virtual-DOM



Angular.js

# Flipcart – first Progressive Web App



<http://tech-blog.flipkart.net/2015/11/progressive-web-app/>

<http://operasoftware.github.io/pwa-list/>



# Resources

- [Progressive Web Apps: Escaping Tabs Without Losing Our Soul](#)
- [Getting started with Progressive Web Apps](#)
- [Progressive Web App: A New Way to Experience Mobile](#)
- [Progressive Web Apps](#) (home page)
- [Escaping tabs with progressive \(web\) apps - Ilya Grigorik keynote](#)

## Contra

- [Radical Statements about the Mobile Web](#)

# Specifications

- [Use Cases and Requirements for Installable Web Apps](#) (Unofficial Draft 08 October 2015)
- [Web App Manifest](#) (Working Draft 27 January 2016)
- [Web Background Synchronization](#) (Draft Community Group Report, 15 December 2015)
- [Push API](#) (Working Draft 15 December 2015)

BE PROGRESSIVE



NOT HYBRID!

