

An Introduction to...

PROGRESSIVE WEB APPS

WITH ANGULAR 7

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ANGULAR SEATTLE MEETUP GROUP

A FEW OF OUR REQUIREMENTS:

- **Web Applications + Touchscreen Clients**
- **Offline Capable**
- **Maximize Code Reuse**
- **Easy Software Updates**
- **Easier Database Synchronization**
- **Modern UI library**
- **Strong Community Support**



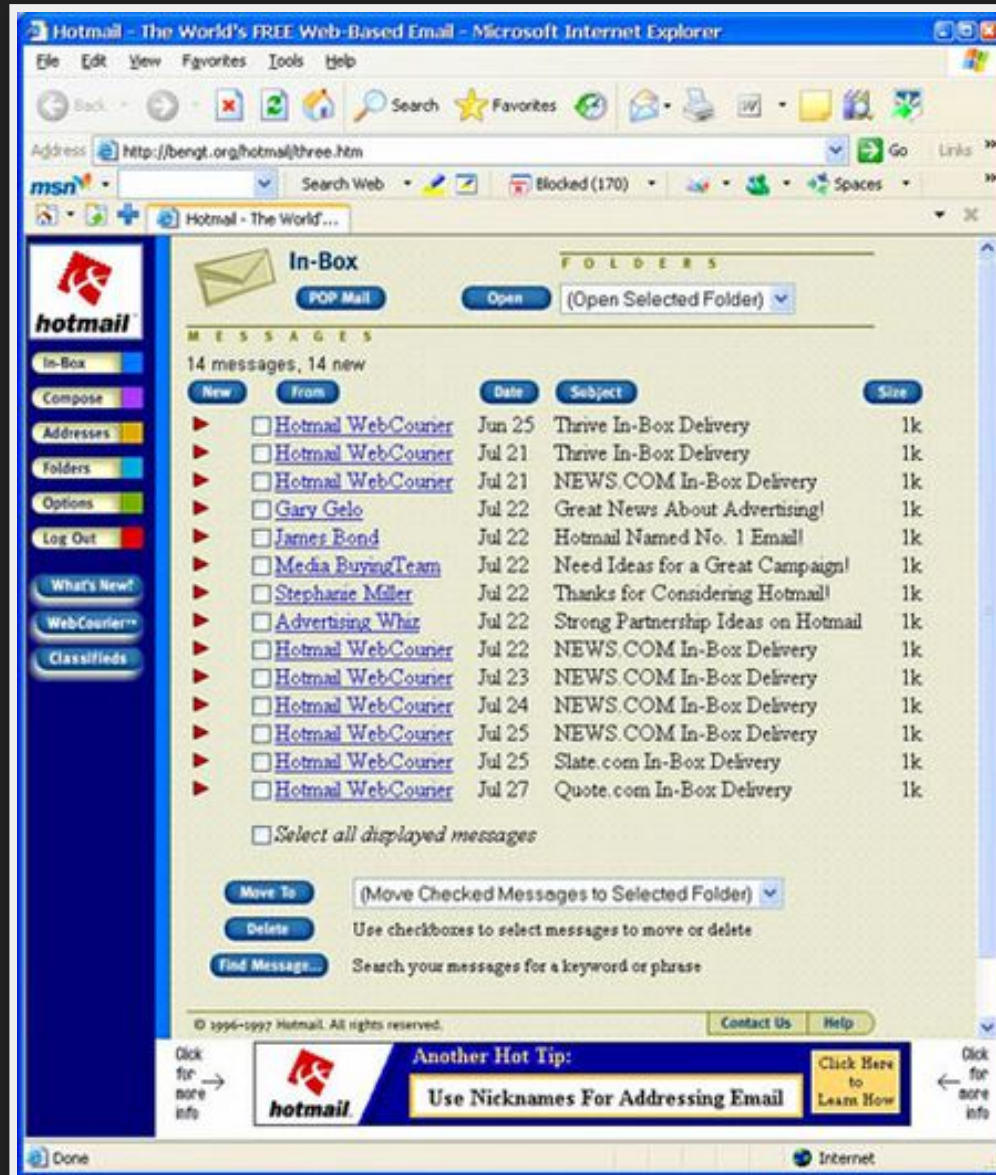
WHAT IS A PWA?

Alex Russell, Frances Berriman (Google 2015)

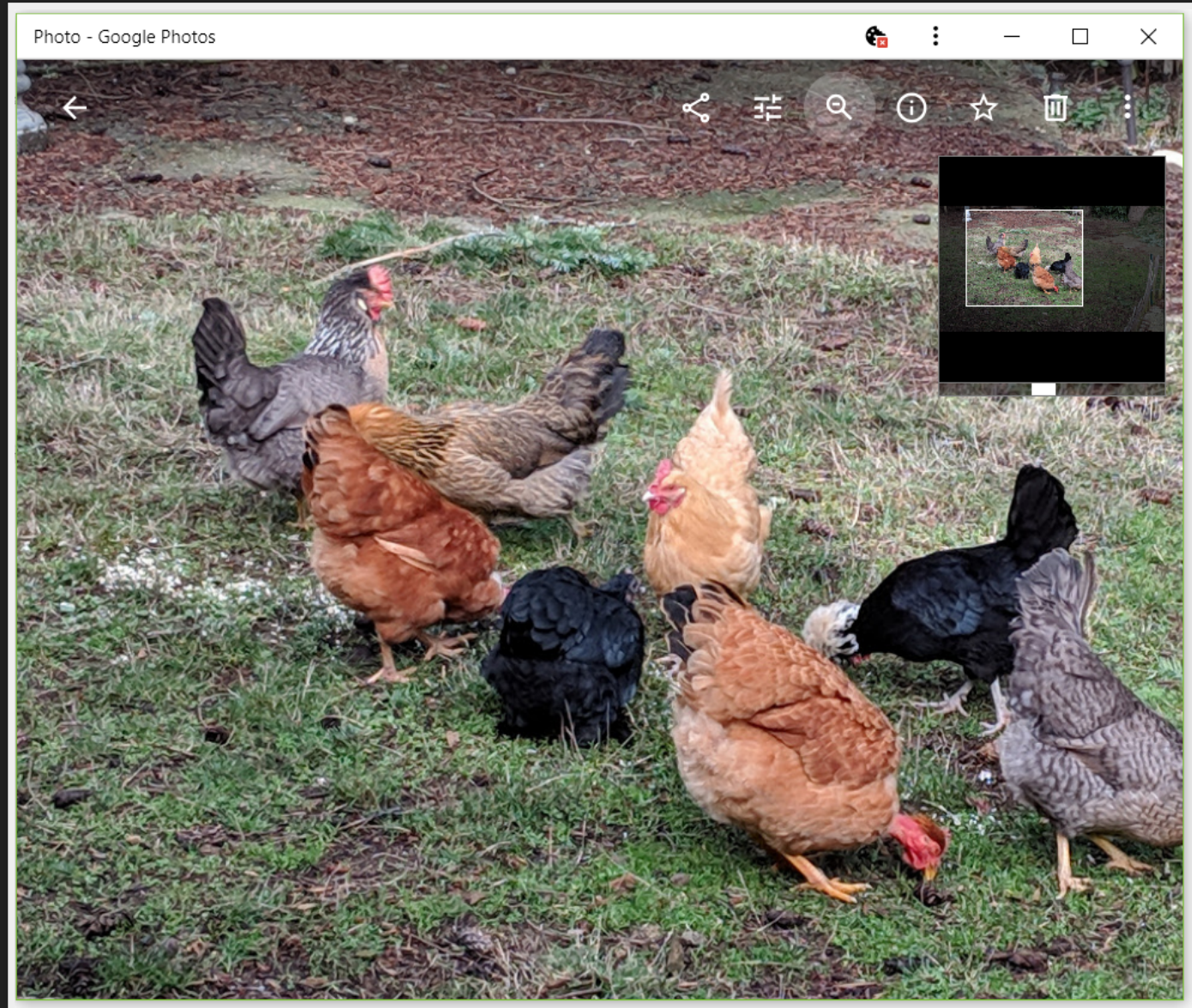
- *Progressive Enhancement*
- Responsive Design
- Connectivity Independent
- App-like
- Fresh
- Safe
- Discoverable
- Re-engageable
- Installable
- Linkable



HOTMAIL, CIRCA 1998:



GOOGLE PHOTOS PWA, 2019:



THE SERVICE WORKER

- Javascript code, served only in secure contexts (localhost or HTTPS)
- Allows offline support
 - Network level proxy: intercepts network calls, and return cached data instead.
- Allows Push notifications
- Provided as @angular/service-worker via the @angular/pwa schematic
 - `ng add @angular/pwa`
 - By default, only enabled in production build (`ng build --prod`)

THE SERVICE WORKER LIFECYCLE

From <https://developers.google.com/web/fundamentals/primers/service-workers/lifecycle> :

- Make offline-first possible.
- Allow a new service worker to get itself ready without disrupting the current one.
- Ensure an in-scope page is controlled by the same service worker (or no service worker) throughout.
- Ensure there's only one version of your site running at once.

WHICH BROWSERS SUPPORT PWA'S?

Is Service Worker Ready? by Jake Archibald

<https://jakearchibald.github.io/isserviceworkerready/>

Can I Use? Browser Support for Service Worker

<https://caniuse.com>

HTML5 API Support, by Adam Bar

<https://whatcanwebdo.today>

DEMO: "HELLO WORLD"

SIMPLE ANGULAR 7 PWA

WHAT DID THE @angular/pwa SCHEMATIC DO?

Created:

- `ngsw-config.json`
- `manifest.json`
- Icons of various intriguing sizes

Updated:

- `package.json` - Add `@angular/service-worker`, `@angular/pwa`
- `angular.json` - Enable `serviceWorker`, add `manifest.json`
- `app.module.ts` - Import and register `ServiceWorkerModule`
- `index.html` - Link to `manifest.json`, set `theme-color`

ngsw-config.json

- Used to create `dist/.../ngsw.json` during prod build

(<https://angular.io/guide/service-worker-config>)

```
{  
  "index": "/index.html",  
  "assetGroups": [  
    {  
      ...  
    },  
  ],  
  "dataGroups": [  
    {  
      ...  
    },  
  ],  
}
```



```
interface AssetGroup {  
    name: string;  
    installMode?: 'prefetch' | 'lazy';  
    updateMode?: 'prefetch' | 'lazy';  
    resources: {  
        files?: string[];  
        urls?: string[];  
    };  
}
```



```
export interface DataGroup {  
    name: string;  
    urls: string[];  
    version?: number;  
    cacheConfig: {  
        maxSize: number;  
        maxAge: string;  
        timeout?: string;  
        strategy?: 'freshness' | 'performance';  
    };  
}
```

manifest.json

<https://developers.google.com/web/fundamentals/web-app-manifest/>

```
{
  "name": "Hello to the World",
  "description": "Possibly the greatest PWA ever",
  "short_name": "Hello",
  "theme_color": "#1976d2",
  "background_color": "#fafafa",
  "display": "fullscreen | standalone | minimal-ui | browse",
  "scope": "/",
  "start_url": "/",
  "icons": [{
    "src": "assets/icons/icon-72x72.png",
    "sizes": "72x72",
    "type": "image/png"}, ...
  ]
}
```

DEMO PART TWO

- Simple "Pomodoro" Timer App
 - with Pugs
- Show how to:
 - Handle service worker/ app updates (SwUpdate)
 - Generate a `manifest.json` + Icons
 - Show how to cache assets (assetGroups)
 - How to cache API queries (dataGroups)
 - How to handle Push notifications (SwPush)

OTHER REFERENCES AND USEFUL LINKS

- Wikipedia. *Progressive Web Applications*
https://en.m.wikipedia.org/wiki/Progressive_web_applications
- Tiffany Tse. *What is Progressive Enhancement?*
<https://www.shopify.com/partners/blog/what-is-progressive-enhancement-and-why-should-you-care>
- Angular Documentation. *Service Workers & PWA*
<https://angular.io/guide/service-worker-intro>
- Angular Service Worker API <https://angular.io/api/service-worker>

- Google. *App manifest/icon generator* <https://app-manifest.firebaseapp.com/>
- Angular Push Notifications <https://blog.angular-university.io/angular-push-notifications/>
- Francesco Cirillo *Pomodoro Technique* <https://francescocirillo.com/pages/pomodoro-technique>
- Reveal.js. *Presentation Framework* <https://revealjs.com/>

THE END