

WEB DAY 2021

04 MARZO • ONLINE CONFERENCE

WEB APP OFFLINE NON ESISTONO PIÙ!

FRANCESCO LEARDINI

TRIVADIS

@PACO_ITA





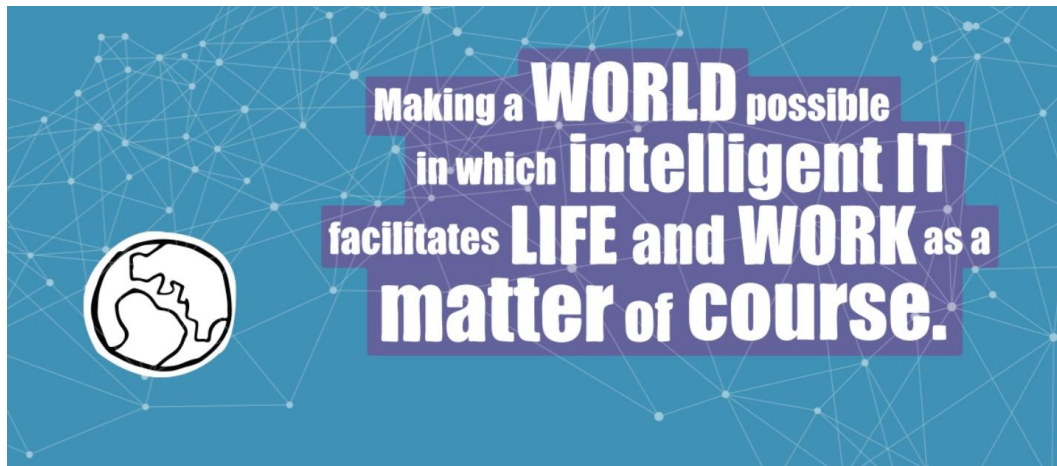
Francesco Leardini

Senior Consultant & Angular Trainer



@paco_ITA

trivadis







No internet

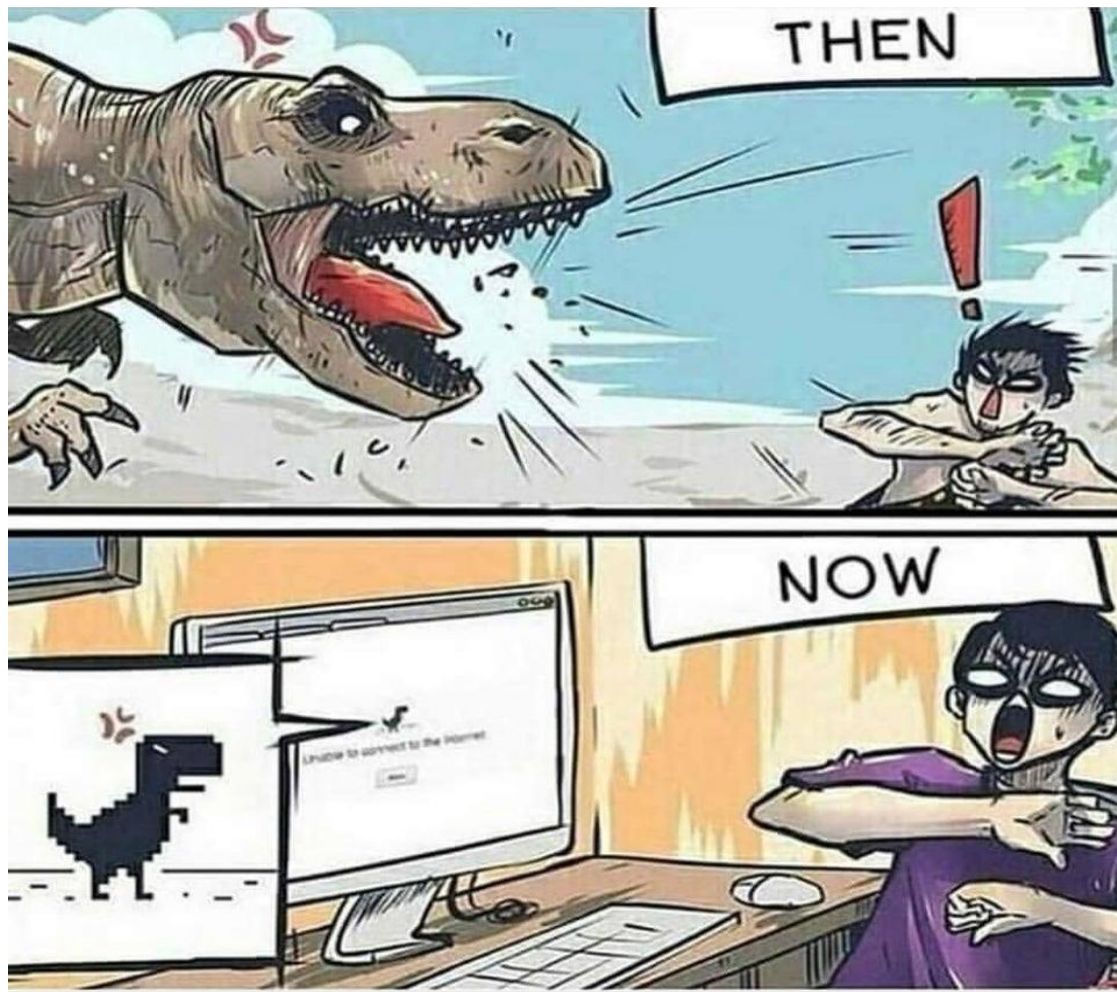
Try:

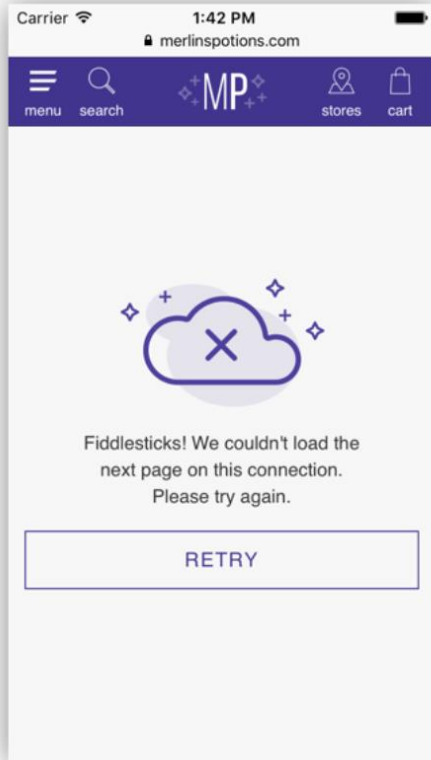
- Checking the network cables, modem, and router
- Reconnecting to Wi-Fi
- [Running Windows Network Diagnostics](#)

DNS_PROBE_FINISHED_NO_INTERNET

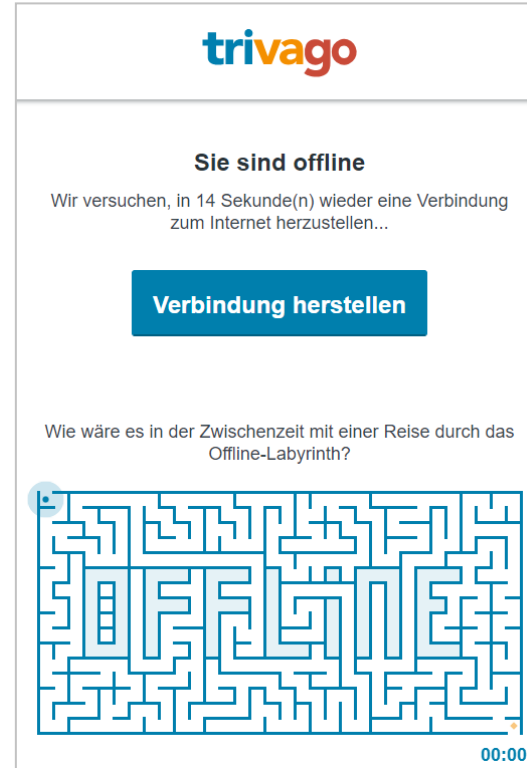


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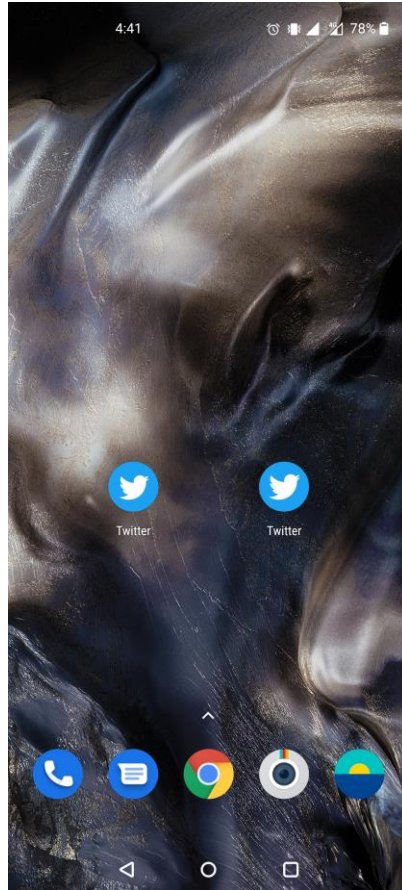
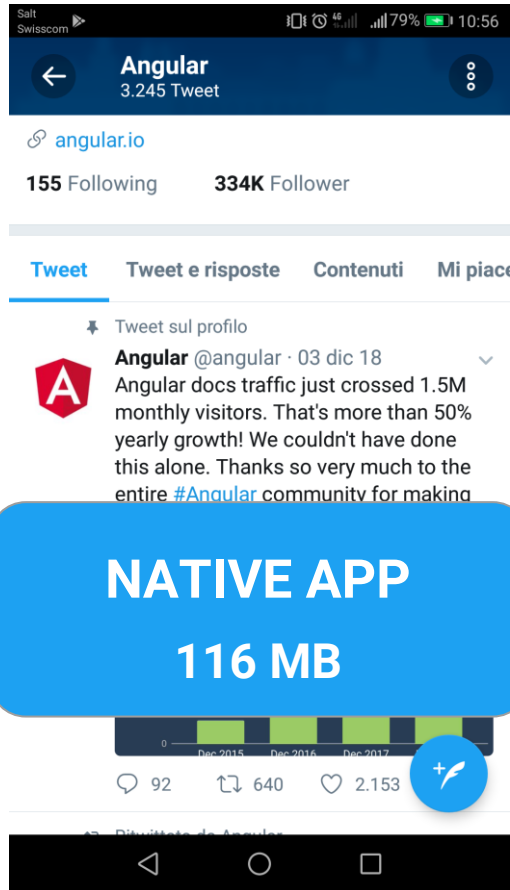


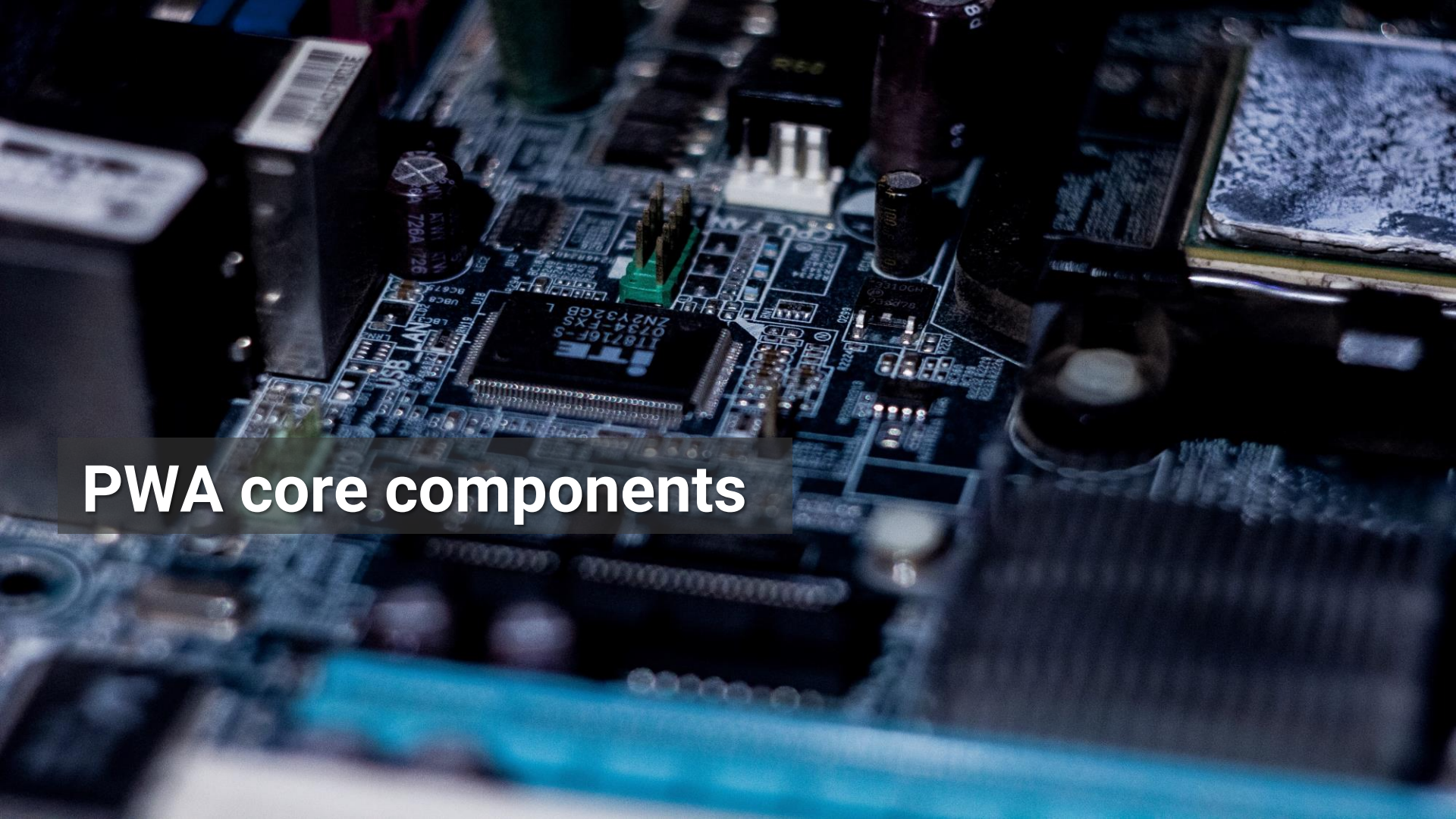
Branded offline pages



Engaging pages

A small test...



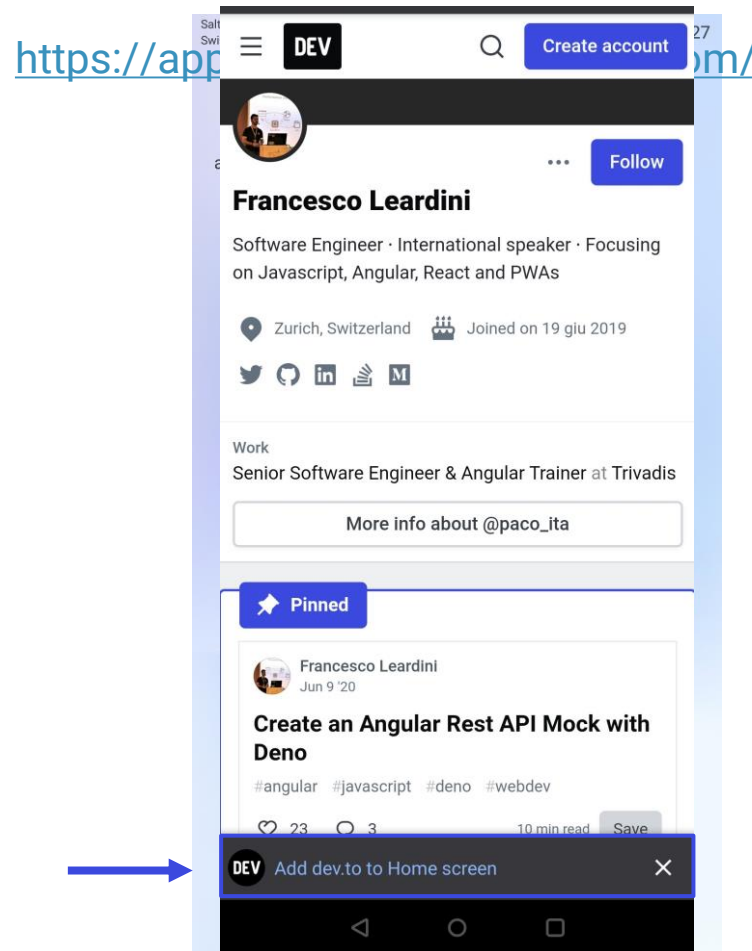


PWA core components

Web manifest

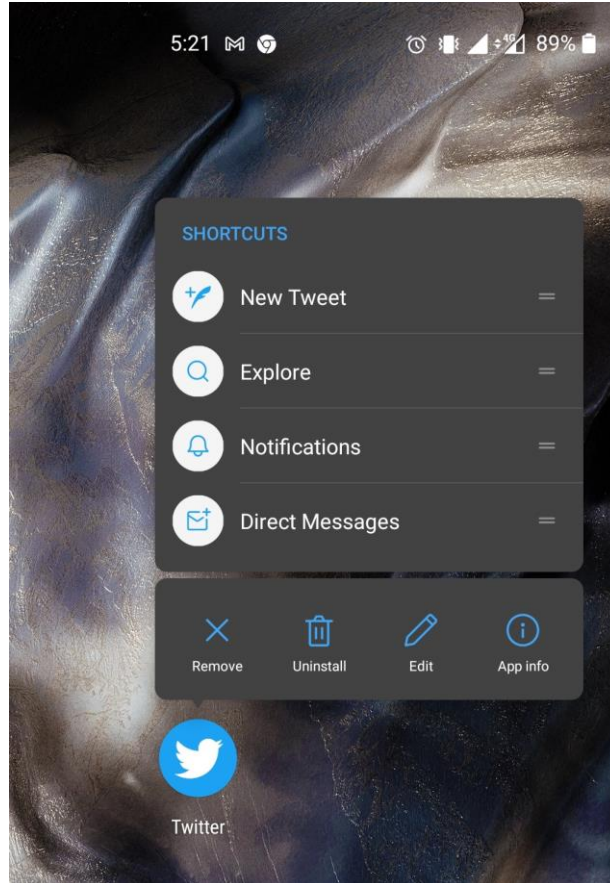
```
1 {  
2   "name": "angular-pwa",  
3   "short_name": "my-pwa",  
4   "display": "standalone",  
5   "start_url": "./",  
6   "icons": [  
7     {  
8       "src": "assets/icons/icon-192×192.png",  
9       "sizes": "192×192",  
10      "type": "image/png",  
11      "purpose": "maskable any"  
12    },  
13    {  
14      "src": "assets/icons/icon-512×512.png",  
15      "sizes": "512×512",  
16      "type": "image/png",  
17      "purpose": "maskable any"  
18    }  
19  ]  
20 }
```

Browser
Standalone
Fullscreen

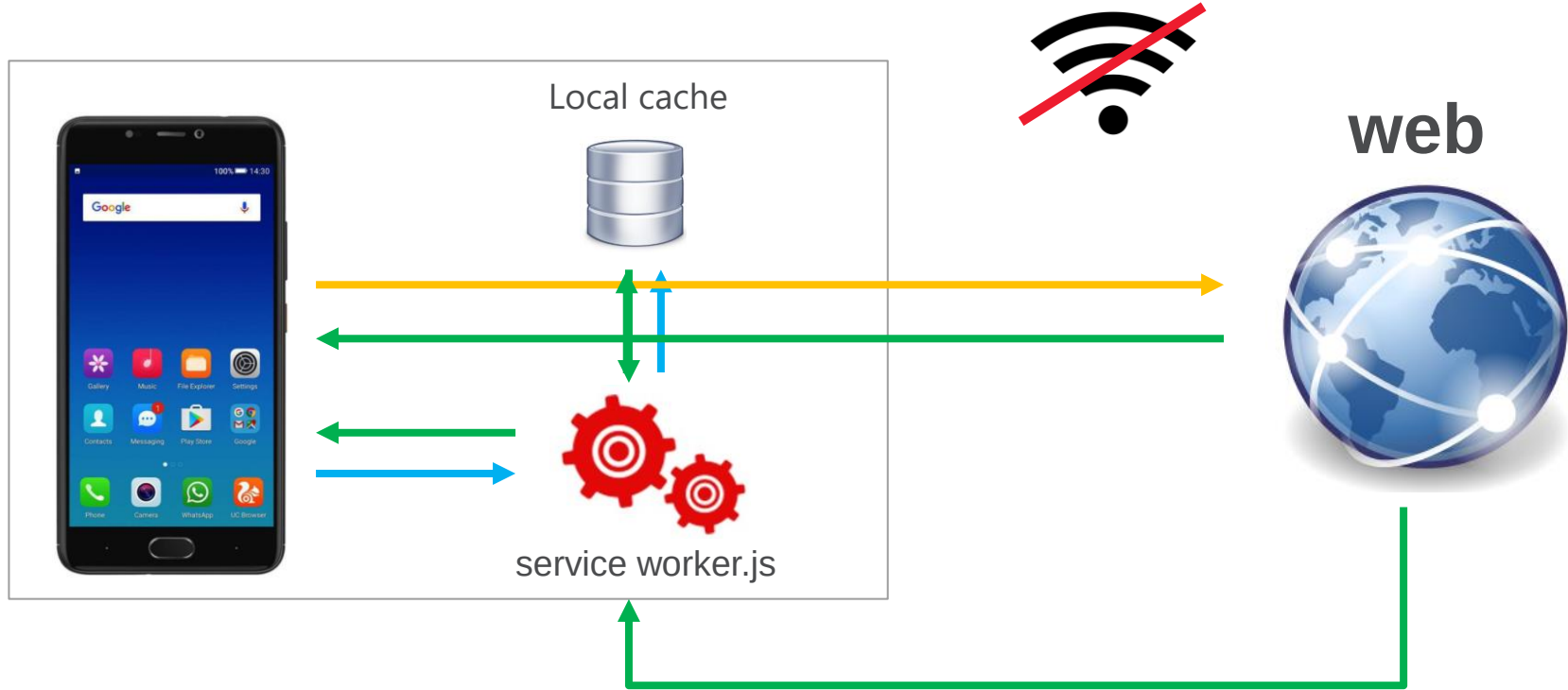


Shortcuts

```
1 "shortcuts" : [  
2   {  
3     "name": "New Tweet",  
4     "url": "/new",  
5     "description": "Create a new message",  
6     "icons": [{  
7       "src": "/assets/new.png",  
8       "purpose": "any"  
9     }]  
10  },  
11  {  
12    "name": "Explore",  
13    "url": "/explore",  
14    "icons": [{  
15      "src": "/assets/search.png",  
16      "purpose": "any"  
17    }]  
18  },  
19  {  
20    "name": "Notifications",  
21    "url": "/notifications",  
22    "icons": [{  
23      "src": "/assets/alarm.png",  
24      "purpose": "any"  
25    }]  
26  }  
27  ...  
28 ]
```



Service worker



Register a service worker

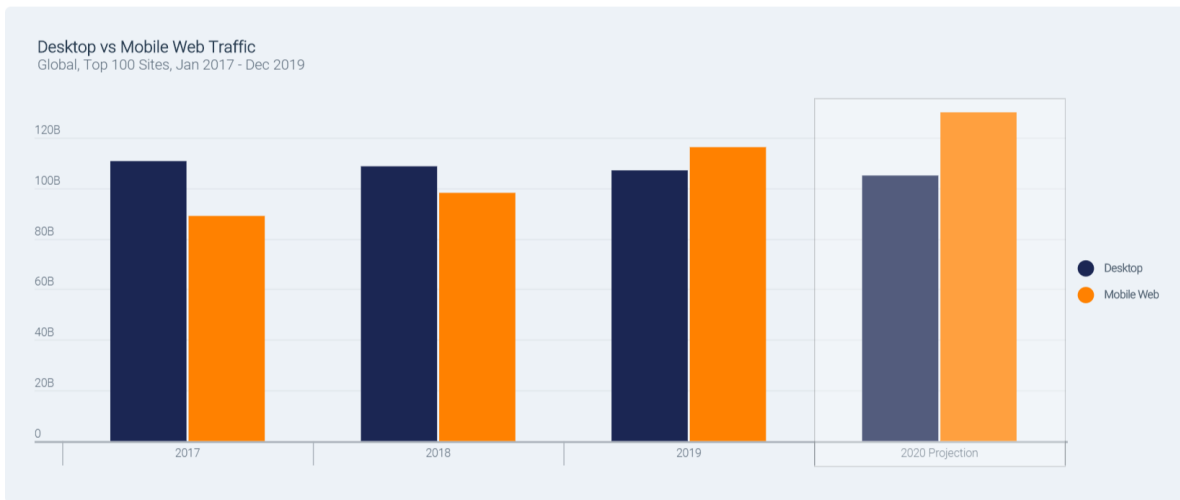
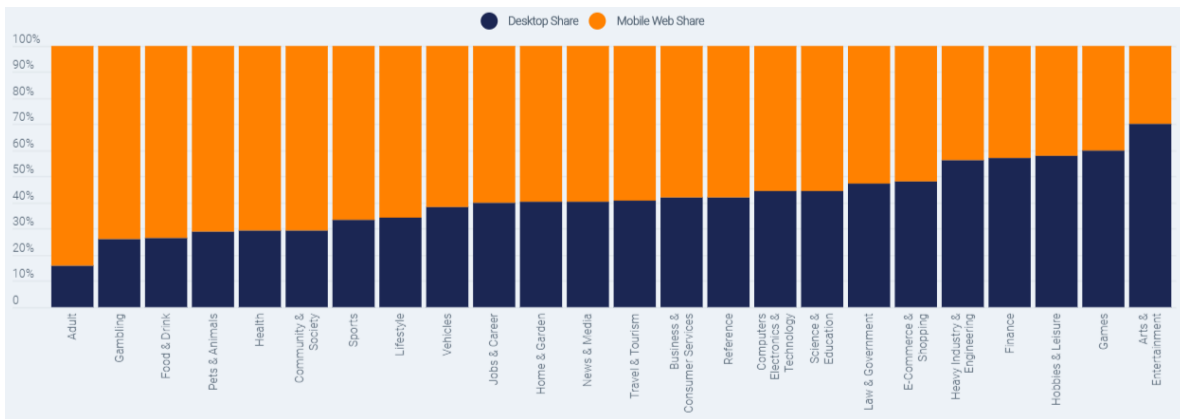
```
1 if ('serviceWorker' in navigator) {  
2   navigator.serviceWorker  
3     .register('./service-worker.js', {scope: './'})  
4     .then((registration) => {  
5       // SW successfully registered  
6     }).catch((error) => {  
7       // Failed to register  
8     });  
9 }
```

Speed Thanks to Caching Strategies



Mobile traffic trend

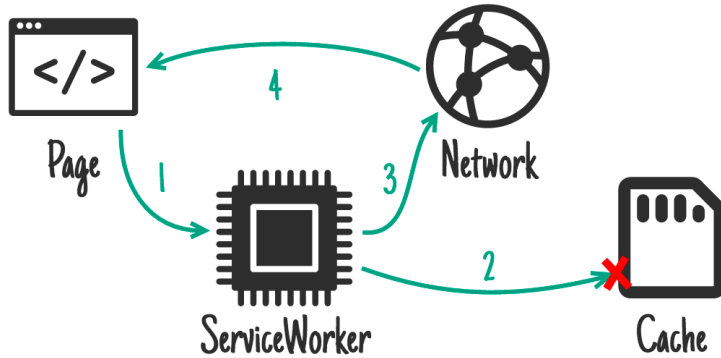
<https://www.similarweb.com/corp/reports/2020-digital-trends-report/>



The height of mobile addiction



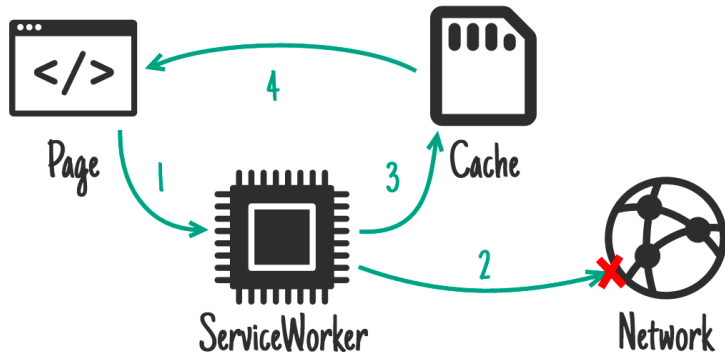
Cache First Strategy



```
1 self.addEventListener('fetch', (event) => {  
2   event.respondWith(  
3     caches.match(event.request)  
4       .then((response) => {  
5         return response || fetch(event.request);  
6       })  
7     )  
8   );  
9 }  
10 }  
11 };
```

Ideal for: offline-first approach and best performance

Network First Strategy

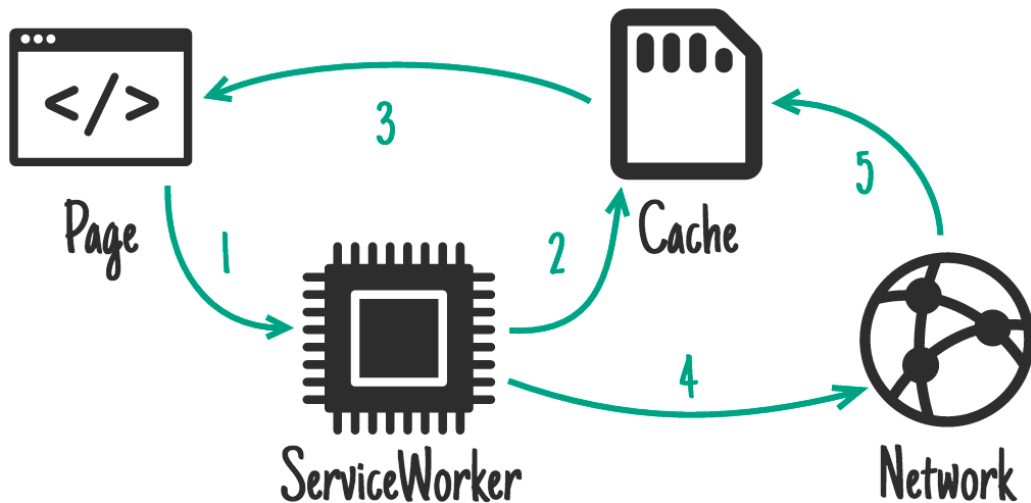


```
1 self.addEventListener('fetch', (event) => {  
2   event.respondWith(  
3     fetch(event.request)  
4       .catch(() => caches.match(event.request))  
5   );  
6 });  
7  
8 });
```

Ideal for: resources that update frequently. Fresh data is required.

Stale While Revalidate Strategy

Ideal for: resources updating frequently,
but providing the latest version is not so important



Stale While Revalidate Strategy

```
1 self.addEventListener('fetch', (event) => {
2   event.respondWith(
3
4     caches.open('cache-v1').then((cache) => {
5       return cache.match(event.request).then((response) => {
6
7         let fetchPromise = fetch(event.request).then((networkResponse) => {
8           cache.put(event.request, networkResponse.clone());
9           return networkResponse;
10        });
11
12        return response || fetchPromise;
13      });
14    }),
15  );
16 });
```





Cache JavaScript and CSS

```
1 workbox.routing.registerRoute(  
2   /\.(?:js|css)$/,  
3   workbox.strategies.staleWhileRevalidate(),  
4 );
```



enhancement

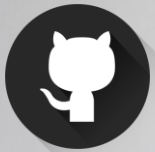
Looking to build a progressive web app? Workbox makes it easy to create an offline first experience.

Angular Service Worker



With angular-cli (1.6+) we can easily turn an existing application into a PWA:

```
ng add @angular/pwa --project myTargetApp
```



<https://github.com/pacoita/angular-pwa-boilerplate>

A Basic Angular PWA



PWA



How can we do better?



CACHE API allows to cache only GET calls...

Background Sync API + IndexedDB

```
1 // main.js
2 // ready resolves when the SW is installed & running
3 navigator.serviceWorker.ready
4   .then(registration => {
5     document.getElementById('submitBtn').addEventListener('click', (event) => {
6       //Save form data into the indexedDB
7
8       registration.sync.register('post-form')
9         .catch(err => { /* Handle error */ })
10    })
11  })
12
13
14 // service-worker.js
15 self.onsync = (event) => {
16   if (event.tag === 'post-form') {
17     event.waitUntil(submitData())
18   }
19 }
20
21 function submitData() {
22   // Access IDB and execute pending POST requests
23 }
```



Firebase platform



Build better apps



Cloud Firestore BETA

Store and sync app data at global scale



ML Kit BETA

Machine learning for mobile developers



Cloud Functions BETA

Run mobile backend code without managing servers



Authentication

Authenticate users simply and securely



Hosting

Deliver web app assets with speed and security



Cloud Storage

Store and serve files at Google scale



Realtime Database

Store and sync app data in milliseconds



Improve app quality



Crashlytics

Prioritize and fix issues with powerful, realtime crash reporting



Performance Monitoring

Gain insight into your app's performance



Test Lab

Test your app on devices hosted by Google



Grow your business



Google Analytics

Get free and unlimited app analytics



Predictions BETA

Define dynamic user groups based on predicted behavior



A/B Testing BETA

Optimize your app experience through experimentation



Cloud Messaging

Send targeted messages and notifications



Remote Config

Modify your app without deploying a new version



Dynamic Links

Drive growth by using deep links with attribution



App Indexing

Drive search traffic to your mobile app



@paco_ITA

Enable offline persistence

```
1 // Initialize Cloud Firestore through Firebase
2 firebase.initializeApp({
3   apiKey: '### FIREBASE API KEY ###',
4   authDomain: '### FIREBASE AUTH DOMAIN ###',
5   projectId: '### CLOUD FIRESTORE PROJECT ID ###'
6 });
7
8 firebase.firestore().enablePersistence()
9   .catch((err) => {
10     // ...
11   });
12
13 // Subsequent queries will use persistence, if it was enabled successfully
```

**NOT SURE IF CONNECTION
STILL WORKING**

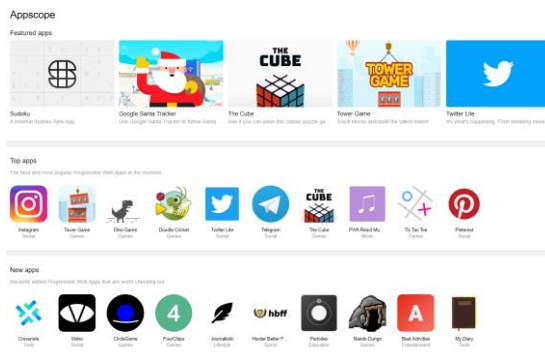


**OR THIS IS JUST
A PROGRESSIVE WEB APP**

More PWA resources



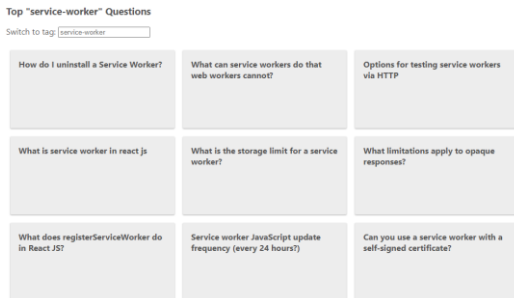
pwarocks.com



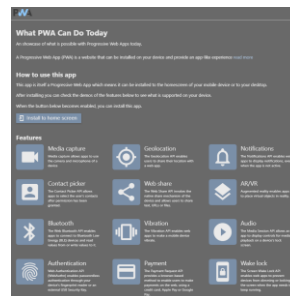
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Francesco Leardini

Senior Consultant & Angular Trainer

Demo & Code



https://github.com/paco_ita



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https://dev.to/paco_ita