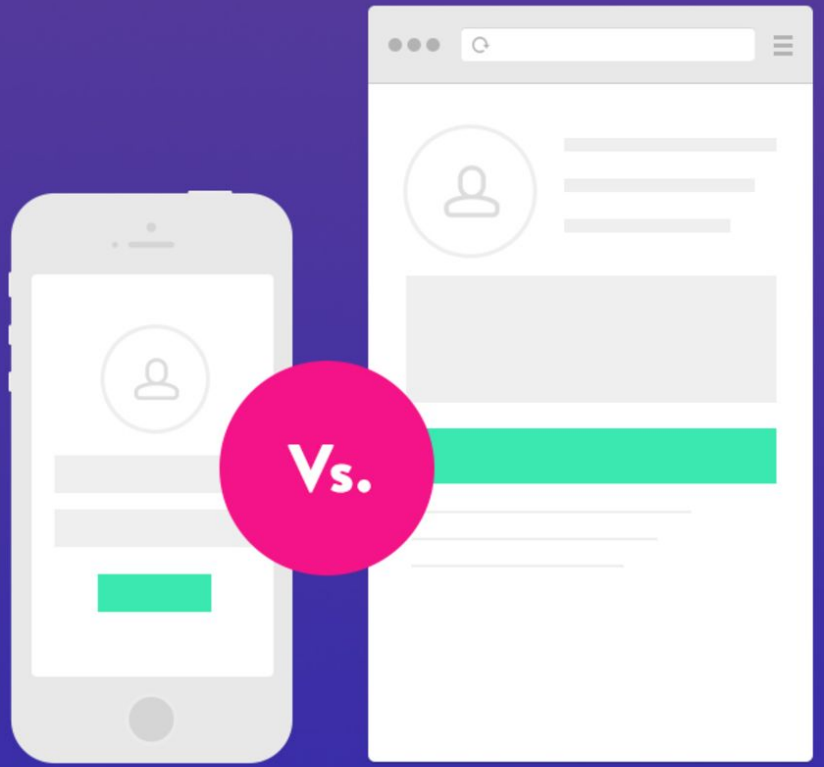
[Tech Radar]
Progressive Web Applications (PWAs):
-- Build Native-like Mobile Web App

via Jimmy Lv

What Web App can do today?

vs. Native App: iOS/Android/...



What Web Can Do Today

Can I rely on the Web Platform features to build my app?
An overview of the device integration HTML5 APIs

✓ Feature available in your current browser ✗ Feature not available in your current browser

Native Behaviors

- LOCAL NOTIFICATIONS ✓
- PUSH MESSAGES ✓
- FOREGROUND DETECTION ✓
- PERMISSIONS ✓

Seamless Experience

- OFFLINE MODE ✓
- HOME SCREEN INSTALLATION
- BACKGROUND SYNC ✓
- INTER-APP COMMUNICATION ✗

Input

- TOUCH GESTURES ✓
- SPEECH RECOGNITION ✓
- CLIPBOARD (COPY & PASTE) ✓
- POINTING DEVICE ADAPTATION ✓

Surroundings

- BLUETOOTH ✓
- NFC ✗
- PROXIMITY SENSORS ✗
- AMBIENT LIGHT ✗

Camera & Microphone

- AUDIO & VIDEO CAPTURE ✓
- ADVANCED CAMERA CONTROLS ✓
- RECORDING MEDIA ✓
- REAL-TIME COMMUNICATION ✓

Location & Position

- GEOLOCATION ✓
- GEOFENCING ✗
- DEVICE ORIENTATION ✓
- DEVICE MOTIONS ✓

Device Features

- NETWORK TYPE & SPEED ✗
- ONLINE STATE ✓
- VIBRATION ✓
- BATTERY STATUS ✓

Screen & Output

- FULLSCREEN ✓
- SCREEN ORIENTATION & LOCK ✓
- WAKE LOCK ✗
- PRESENTATION FEATURES ✓

Operating System

- OFFLINE STORAGE ✓
- FILE ACCESS ✓
- CONTACTS ✗
- STORAGE QUOTAS ✓

Progressive Web Apps

all | business | demo | event | game | news | reference | shopping | social | tool | other

AliExpress

Snapdrop

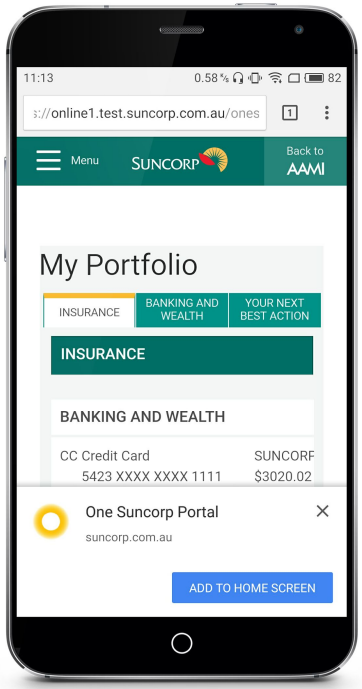
Financial Times

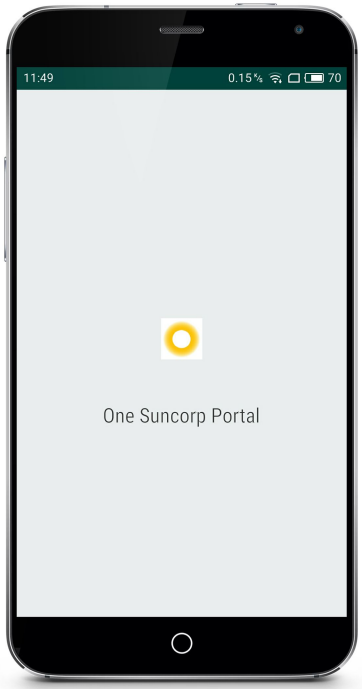
Flipkart

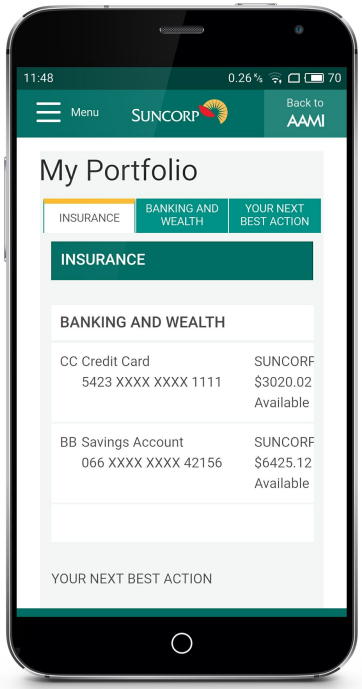
Pokedex

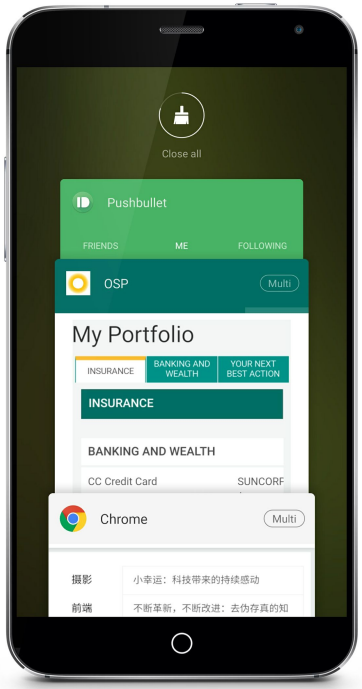
Podle

Show Time: NativeApp-like User Experience



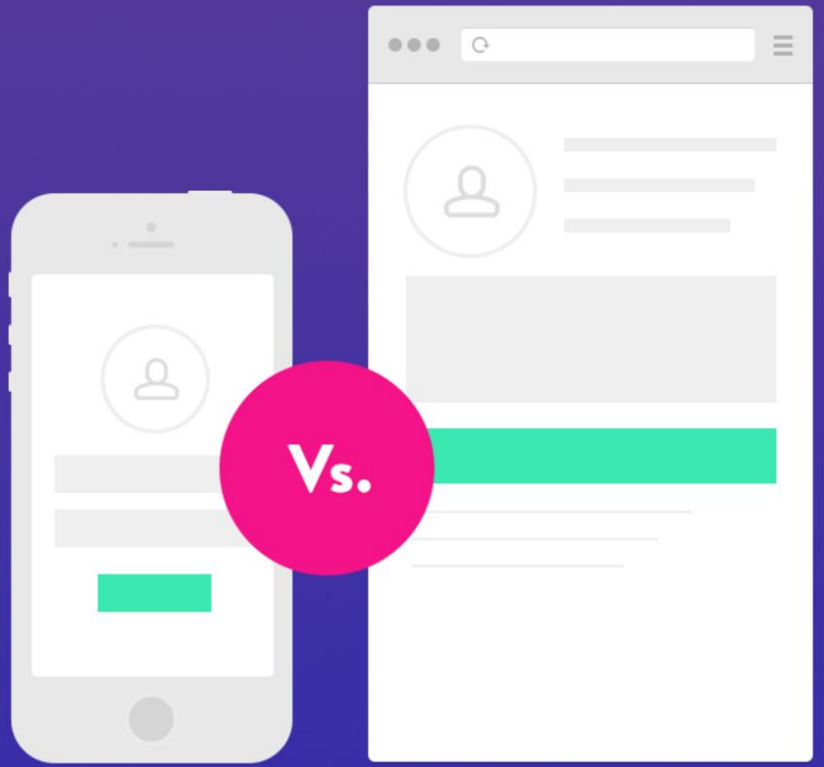






What Web App can do today?

vs. Native App: iOS/Android/...



IGNITE ONLINE

FEATURE	PROGRESSIVE WEB APP	NATIVE APP
FUNCTIONS OFFLINE	✓	✓
MOBILE-SPECIFIC NAVIGATION	✓	✓
PUSH NOTIFICATIONS	✓	✓
HOME SCREEN ACCESS	✓	✓
NO DOWNLOAD REQUIRED	✓	✗
BYPASSES THE MARKETPLACE	✓	✗
LINKABLE AND SHAREABLE	✓	✗
INDEXED BY GOOGLE	✓	✗
LOW DATA REQUIREMENTS	✓	✗
REQUIRES NO UPDATES	✓	✗

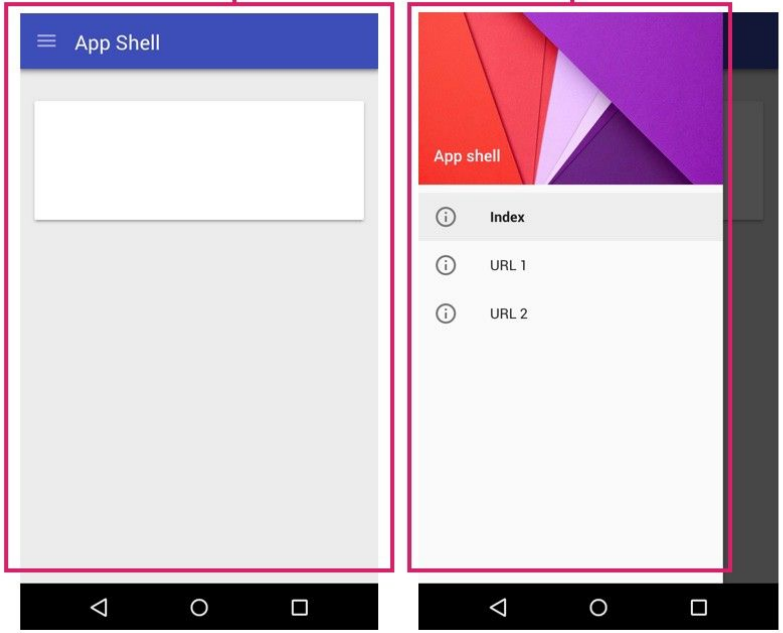
Feature Highlights

Progressive Web Apps take advantage of new technologies to bring the best of mobile sites & native apps to users.

- Progressive - 渐进增强
- Responsive - 响应式介面
- App-like - 类原生应用的操作模式与用户界面
- Fresh - 持续更新，动态更新
- Safe - 全面采用 HTTPS
- Discoverable - 即搜即用，搜索引擎友好
- Re-engageable - 消息通知，主动与使用者互动
- Installable - 可安装，Add To Home
- Linkable - 通过 URL 可以随时分享

application shell

content



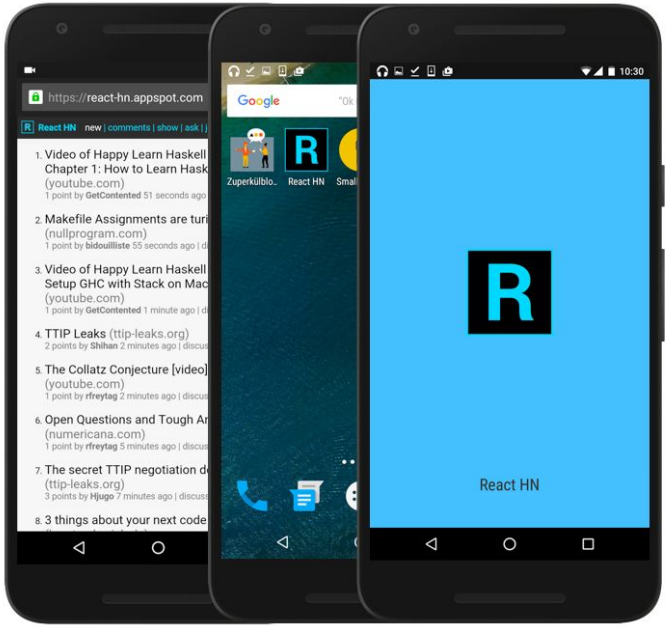
Cached shell loads **instantly** on repeat visits.

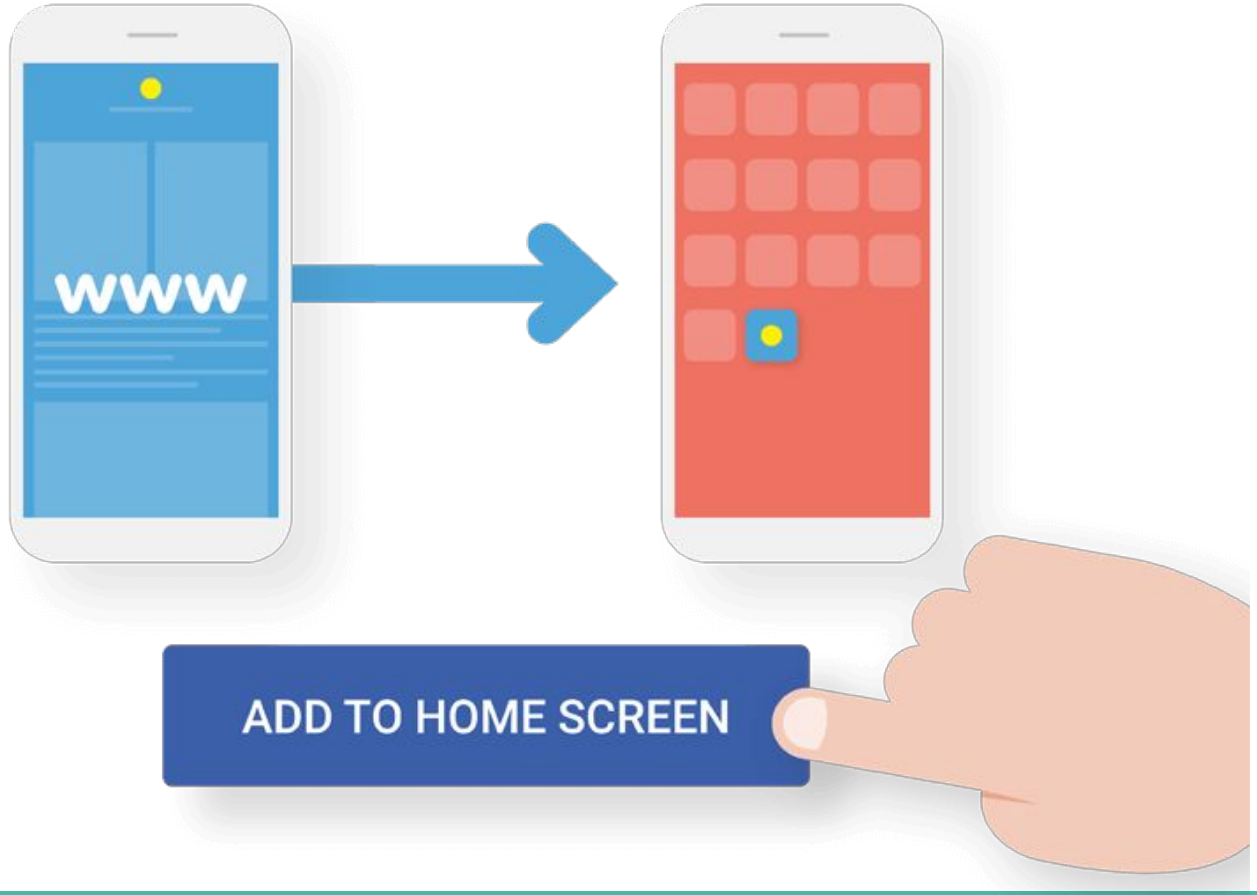
Dynamic content then populates the view

Step 1: add manifest.json

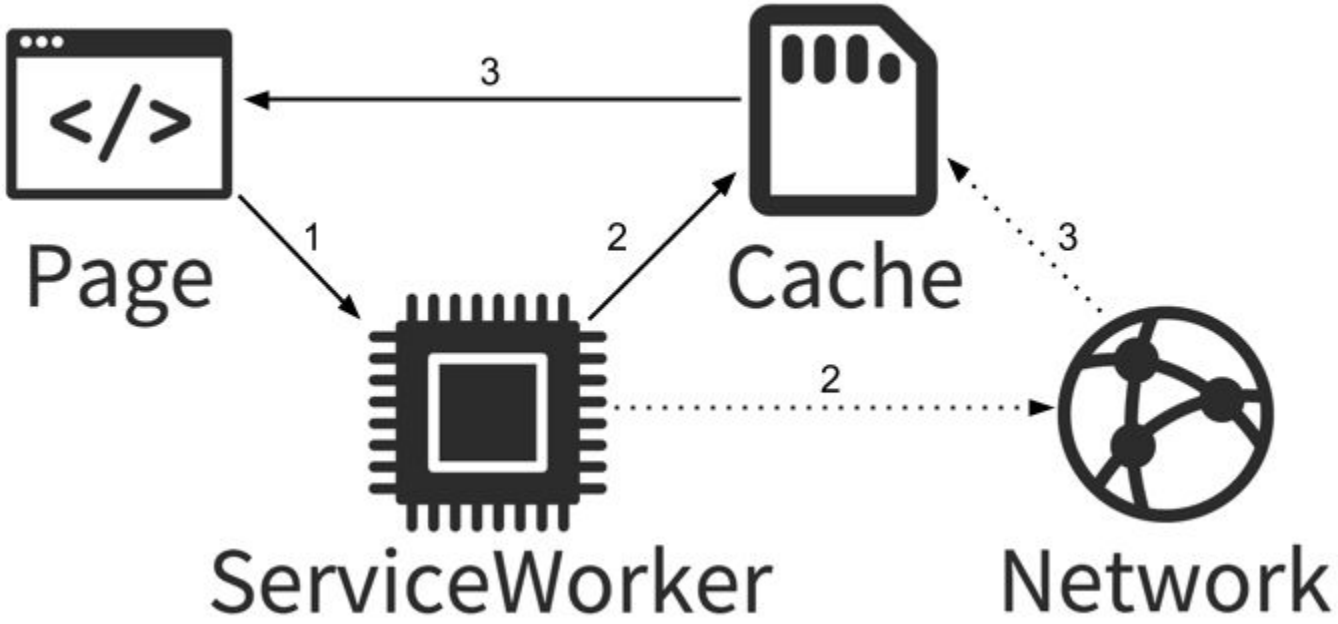
Web App Manifest

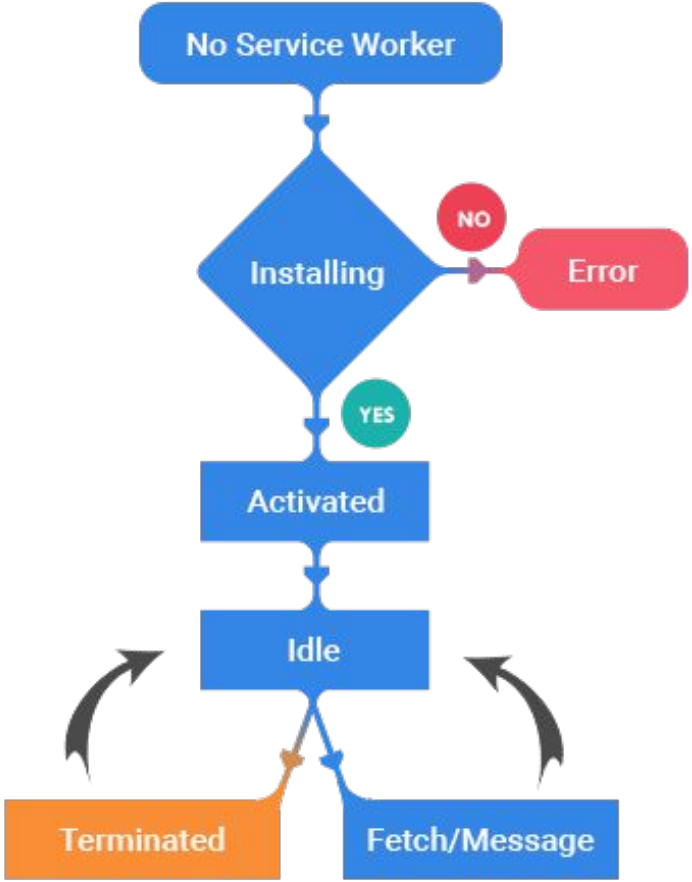
```
{
 "name": "React HN",
 "short_name": "React HN",
 "icons": [{
      "src": "img/android-chrome-192x192.png",
      "sizes": "192x192",
      "type": "image/png"
    },...],
 "start_url": "index.html",
 "background_color": "#4CC1FC",
 "display": "standalone",
 "theme_color": "#222222"
}
```

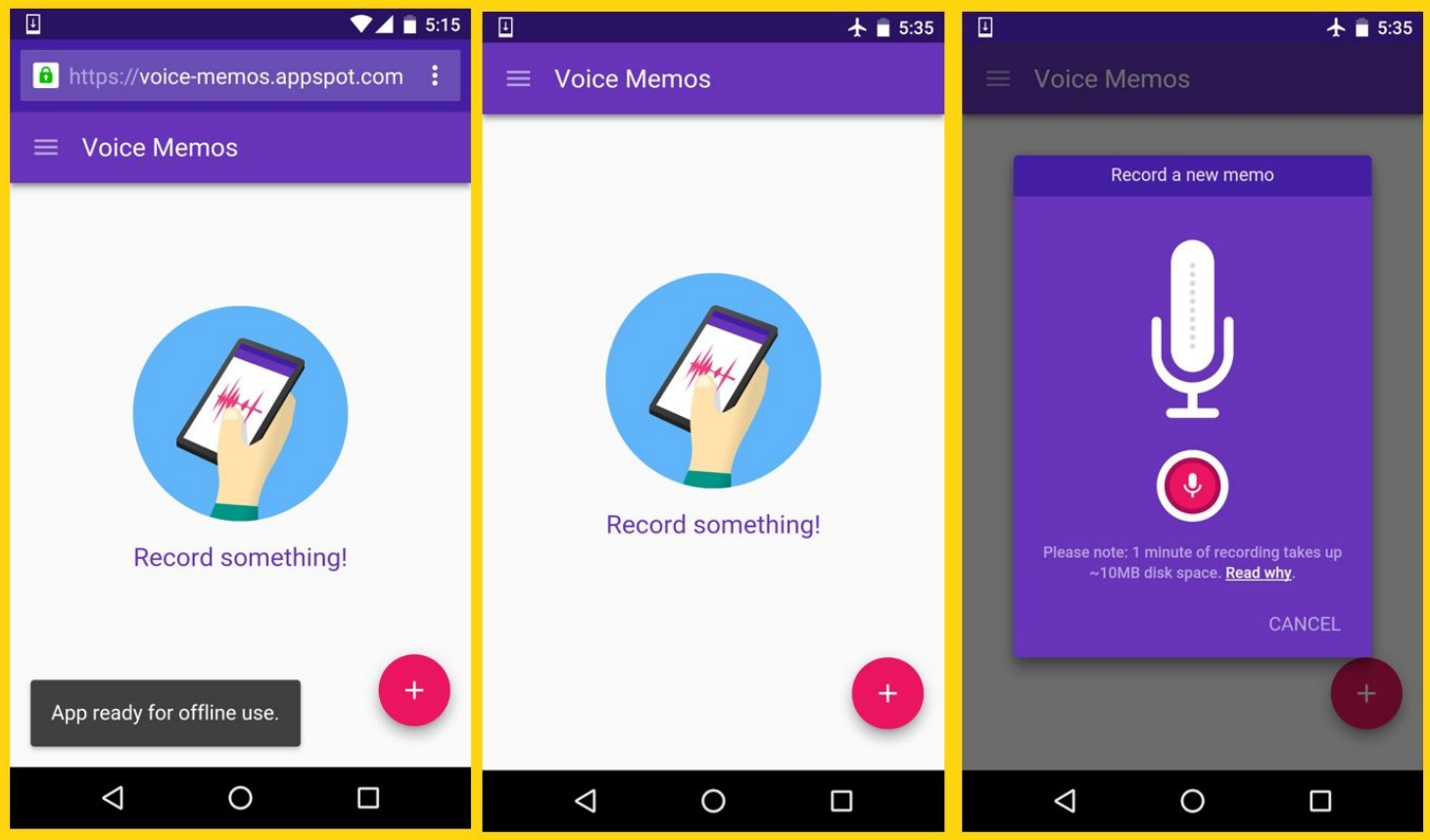



www
ADD TO HOME SCREEN

Service Worker



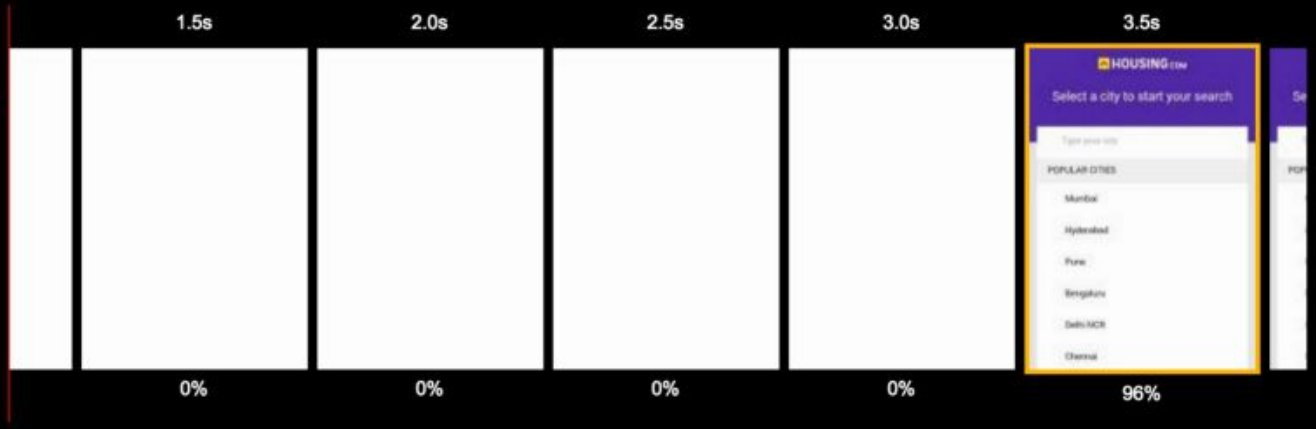

No Service Worker
Installing
NO
Error
YES
Activated
Idle
Terminated
Fetch/Message



Service Worker caching of the app shell, allowing it to load without the network

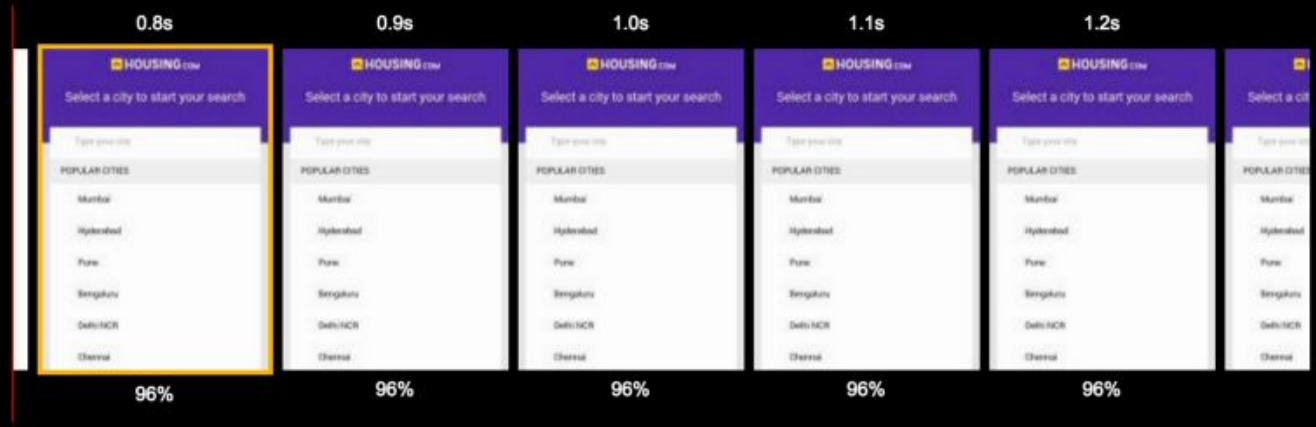
First visit

Moto G / 3G



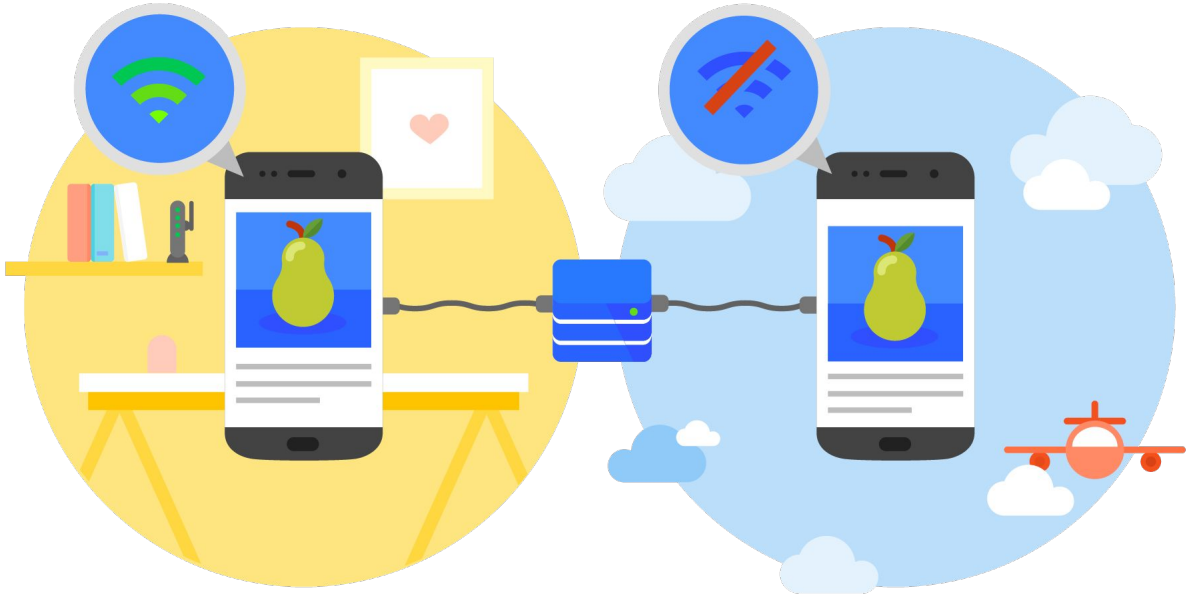
Repeat visit

Near instant loading thanks to offline caching with Service Worker



Step 2: add service-worker.js and register

- sw-precache
- (sw-toolbox)
- webpack?



- Progressive Web App
- Best Practices
- Performance
- Fancier stuff

Results for: https://pwa-experiment-69ffd.firebaseapp.com/
Generated on: 4/21/2017, 3:24:55 PM PDT

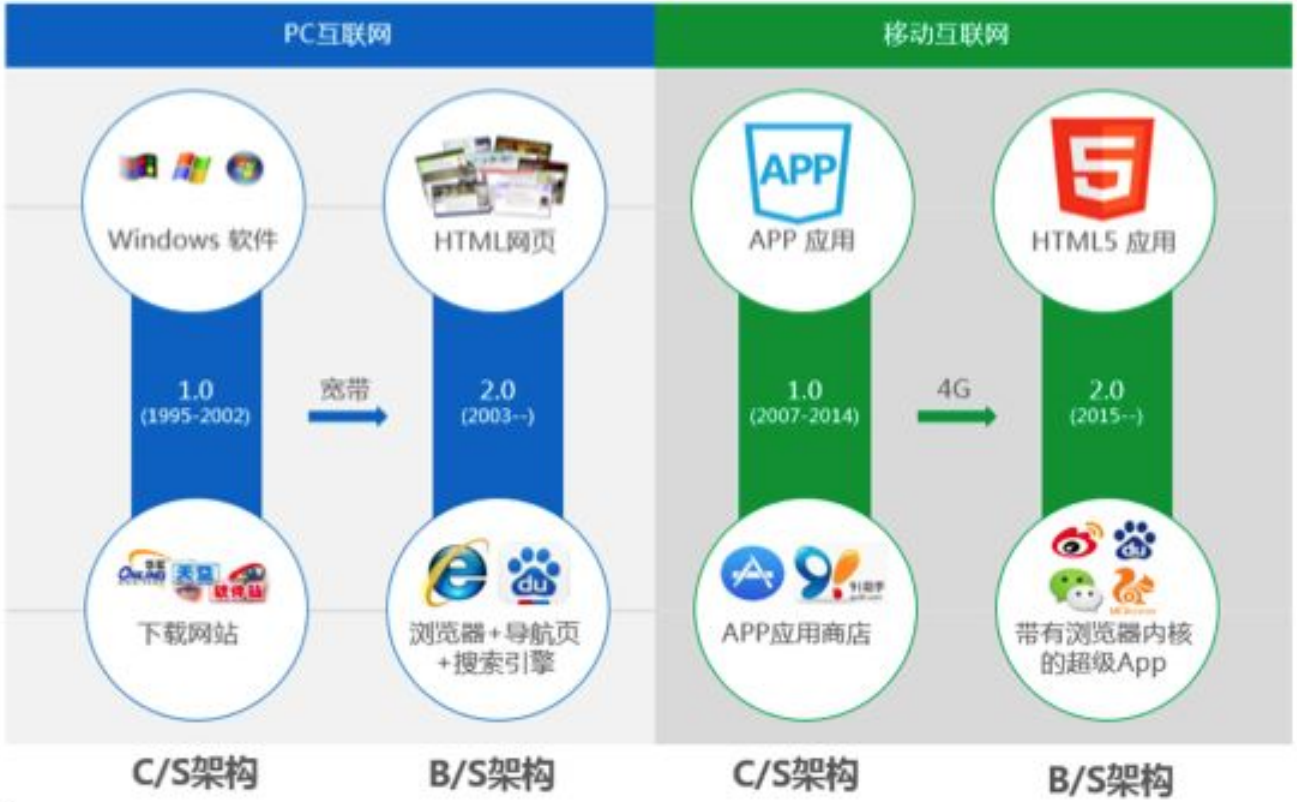
Export...

100/100 Progressive Web App

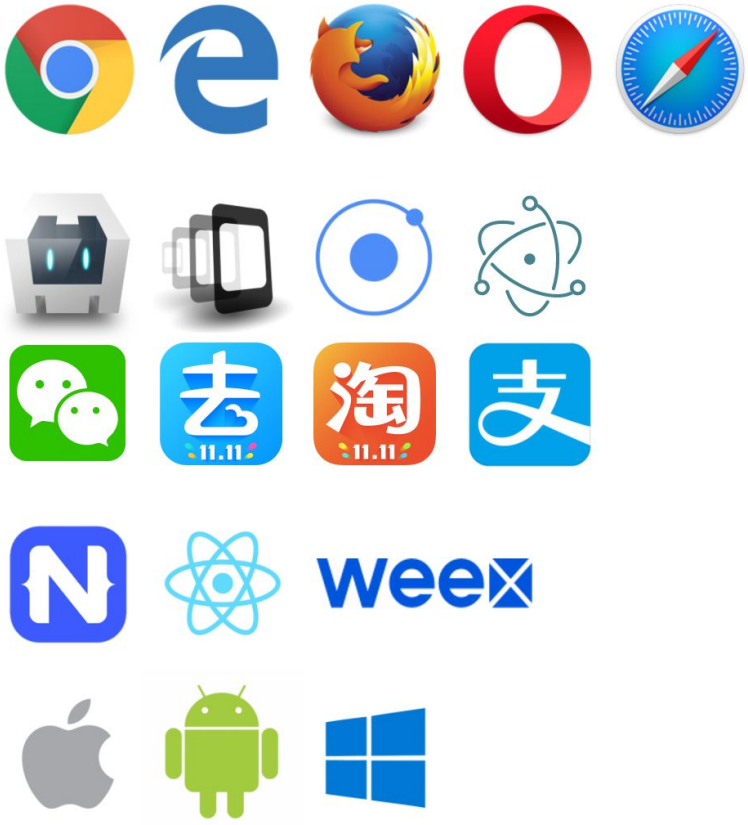
These audits validate the aspects of a Progressive Web App. They are a subset of the PWA Checklist.

- App can load on offline/flaky connections
- Page load performance is fast
- Site is progressively enhanced
- Network connection is secure
- User can be prompted to Add to Homescreen
- Installed web app will launch with custom splash screen
- Address bar matches brand colors
- Design is mobile-friendly

History


PC互联网
移动互联网
Windows 软件
HTML网页
APP
APP 应用
HTML5 应用
1.0
(1995-2002)
宽带
2.0
(2003--)
1.0
(2007-2014)
4G
2.0
(2015--)
下载网站
浏览器+导航页
+搜索引擎
APP应用商店
带有浏览器内核
的超级App
C/S架构
B/S架构
C/S架构
B/S架构

Future?



Web

↓

↓

Hybrid

↑

↑

JS 2 Native

↓

Native

Zero Cost: Just Fewer Configurations

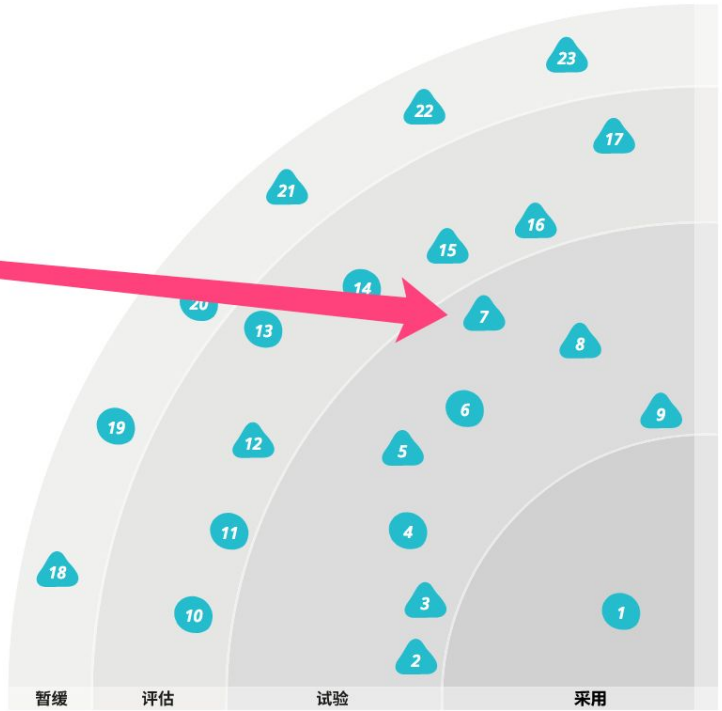
技术

采用
1. Pipelines as code

试验
2. APIs as a product
3. Decoupling secret management from source code *NEW*
4. Hosting PII data in the EU
5. Legacy in a box *NEW*
6. Lightweight Architecture Decision Records
7. Progressive Web Applications *NEW*
8. Prototyping with InVision and Sketch *NEW*
9. Serverless architecture

评估
10. Client-directed query
11. Container security scanning
12. Conversationally aware APIs *NEW*
13. Differential privacy
14. Micro frontends
15. Platform engineering product teams *NEW*
16. Social code analysis *NEW*
17. VR beyond gaming

暂缓
18. A single CI instance for all teams
19. Anemic REST
20. Big Data envy
21. CI theatre *NEW*
22. Enterprise-wide integration test environments *NEW*
23. Spec-based codegen *NEW*



Thank You!