

Preload list

<https://web.autocad.com/#/canvas.html?pid=542783559>

<https://www.funkykarts.rocks/demo.html> (+mobile)

The Web in 2018



Google IO Extended 2018



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Software Engineer

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**Google Developers
Experts**

Web Technologies

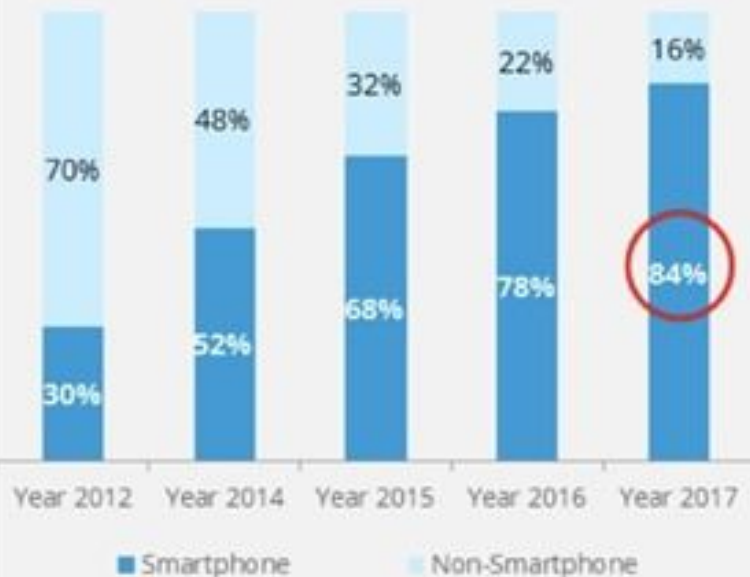
The Web in 2018



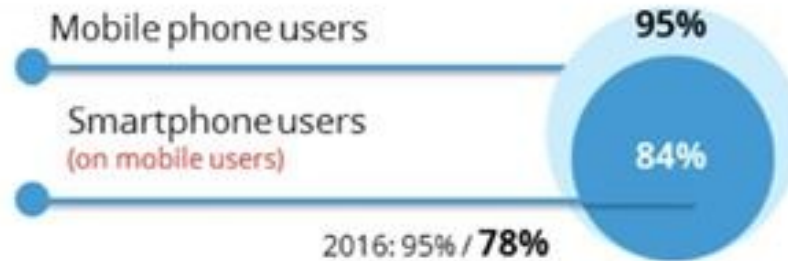
Google IO Extended 2018

SMARTPHONE PENETRATION IN VIETNAM

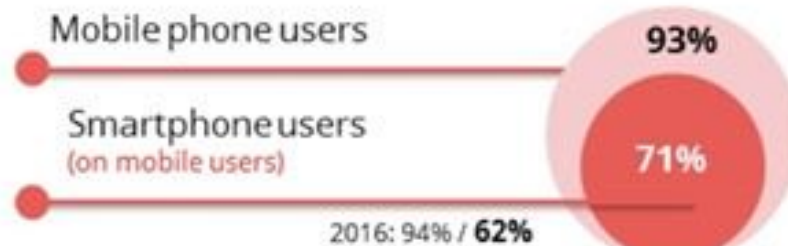
% OF PEOPLE USING SMARTPHONE
AMONG
MOBILE PHONE USERS IN KEY CITIES



KEY CITIES



SECONDARY CITIES



RURAL



Source: Nielsen Vietnam Smartphone Insight Report, Q4 2017; Key cities: (n=1,882); Secondary cities (n=1,930); Rural (n=2,027)

Copyright © 2017 The Nielsen Company

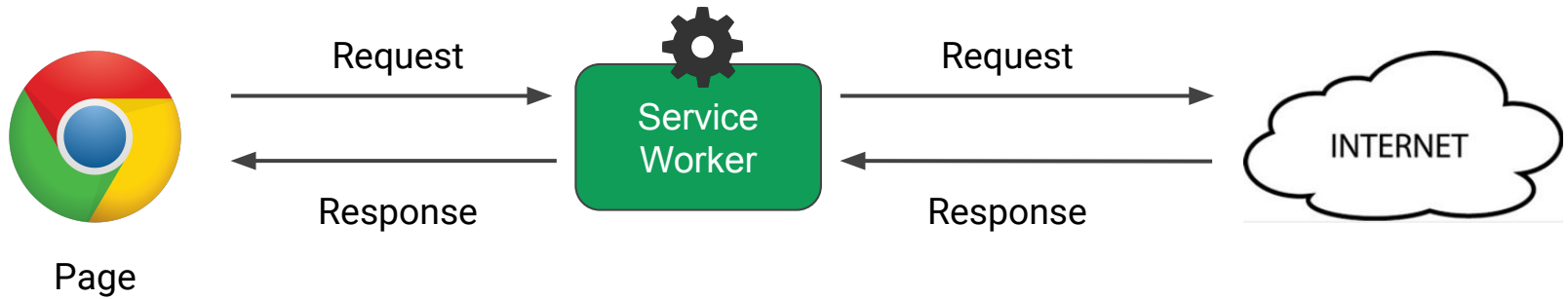
Mobile Web

Async / Await
Network Quality signals
CSSOM
Clear-Site-Data header
Resize Observer
Picture-in-Picture
CSS Object Model
Web Push
Worklets
WebXR
WebAssembly
CSS Grid
Async Generators
Web App Manifest
Server Timing API
Persistent Storage
Device Memory JS API
Background Sync & Fetch
Variable Fonts
Notifications
PaymentRequest
Async Iterators
Resize Observer
Broadcast Channel
Media Capture
Generic Sensor API
Web Share
Async Clipboard
Resource Timing API
OffscreenCanvasAPI
Web Bluetooth
Web Authentication
Presentation API
Fetch API
WebUSB
Service Worker

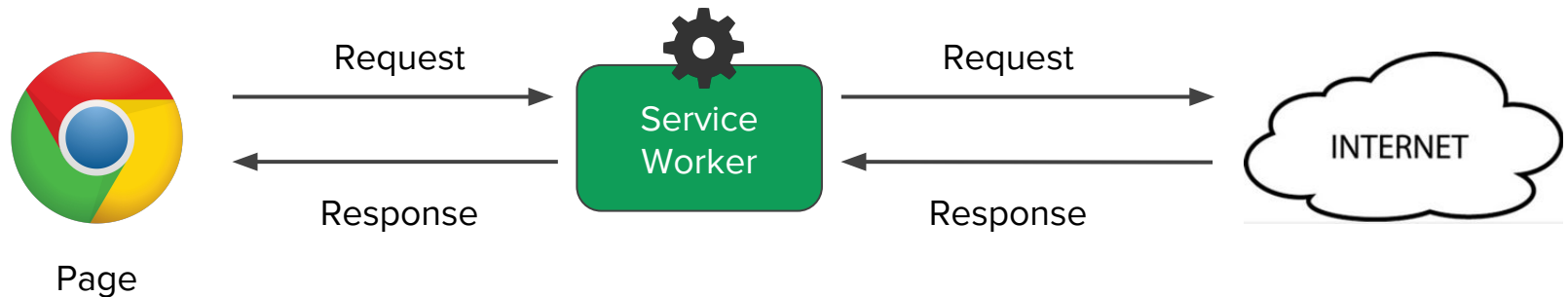
Service Worker

What is Service Worker?

What is Service Worker?



What is Service Worker?



With Service Worker, a web page can now:

- Receive Push Notification
- Work offline
- Download in background
- ...

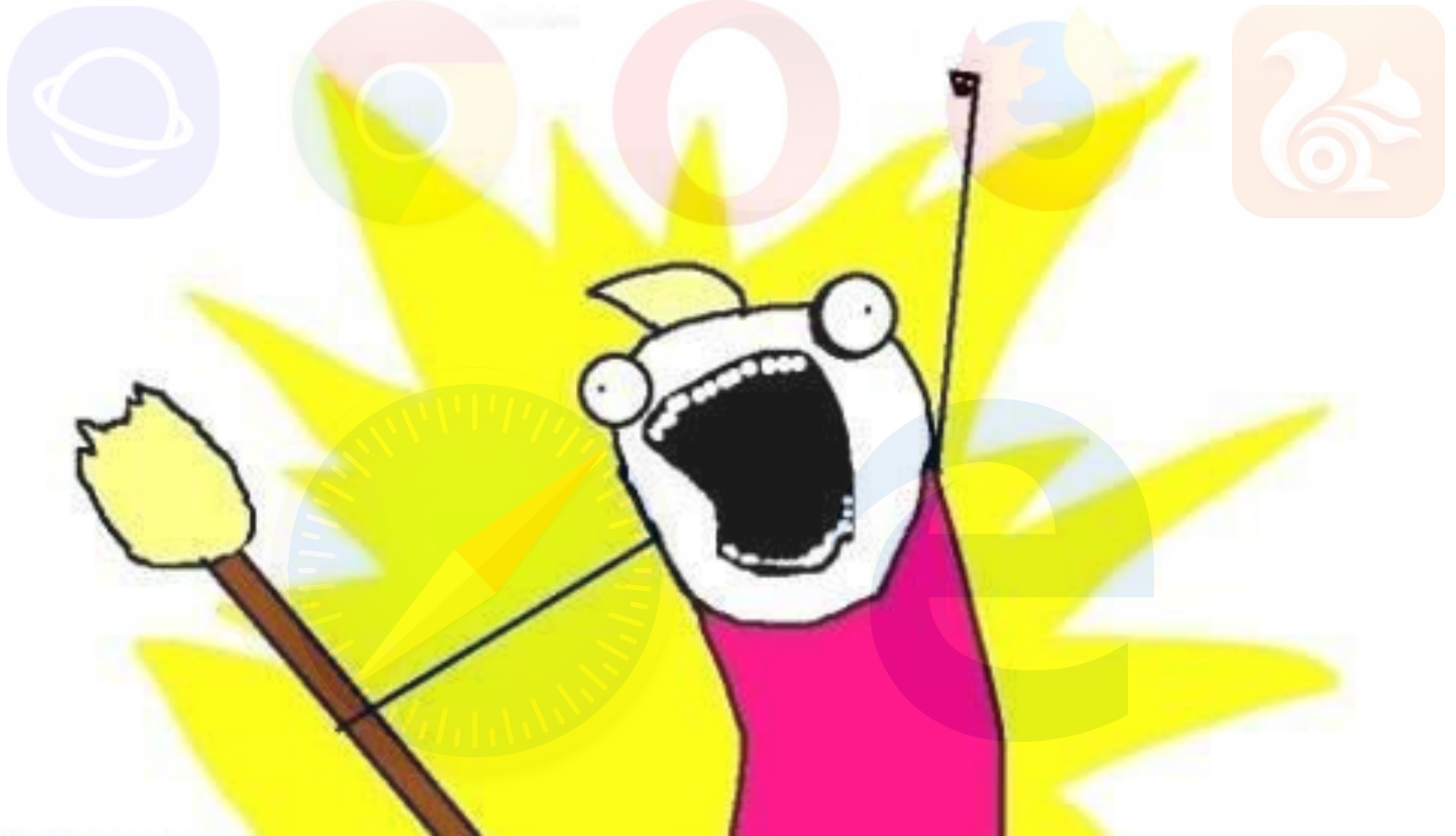






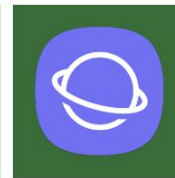


ALL THE BROWSERS!!!



Service worker enthusiasm

The first thing any implementation needs.



Chrome: Shipped.

Firefox: Shipped.

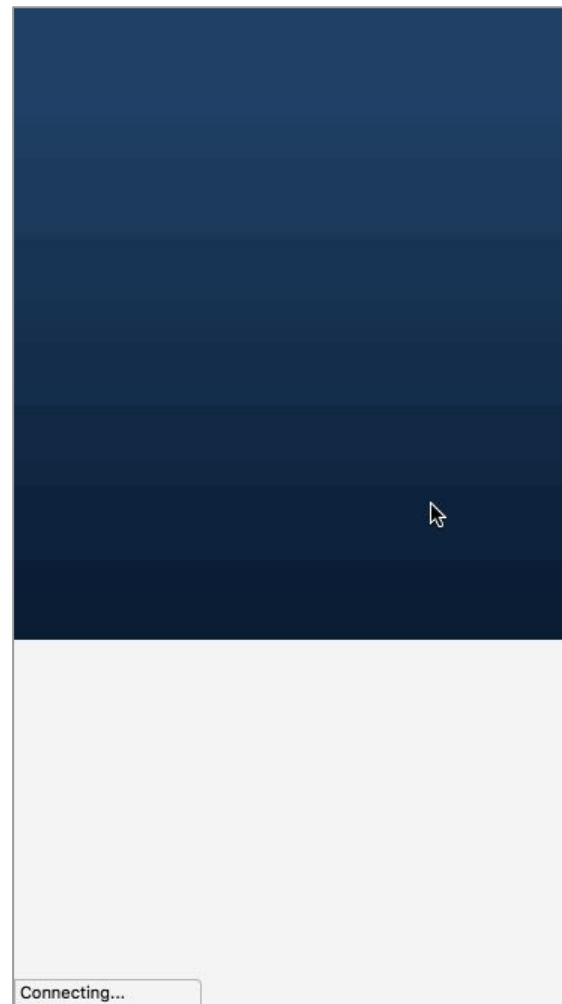
Samsung Internet: Shipped. Based on Chromium 44.2403 with some [additions and changes](#). (See "Service Worker" section.)

Safari: [Shipped](#).

Edge: [Shipped](#).

Support does not include iOS versions of third-party browsers on that platform (see Safari support).

Progressive Web Apps



iPhone 5/SE ▾320 × 568

Application

Manifest

Service Workers

Clear storage

Storage

Local Storage

Session Storage

IndexedDB

Web SQL

Cookies

Cache

Cache Storage

Application Cache

Frames

top

App Manifest

<laz-g-cdn.alicdn.com/lzmod/pwa/5.0.3/manifest.vn.json>

Identity

Add to homescreen

NameLazada Progressive Web Application

Short nameLazada

Presentation

Start URLhttps://www.lazada.vn/?spm=a2o4n.homepage_pwa.0.0

Theme color#003E52

Background color#F36F20

Orientationportrait

Displaystandalone

Icons

16x16

image/png

32x32

Lazada

TI KI Corporation [VN] | https://tiki.vn

iPhone 5/SE 320 x 568

Application

- Manifest
- Service Workers
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Storage

- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies

Cache

- Cache Storage
- Application Cache

Frames

- top

App Manifest

</manifest.json>

Identity

[Add to homescreen](#)

Name Tiki - Niềm vui mua sắm

Short name Tiki

Presentation

Start URL [/?homescreen=true&utm_source=homescreen&utm_medium=\(n](/?homescreen=true&utm_source=homescreen&utm_medium=(n)

Theme color #00b7f1

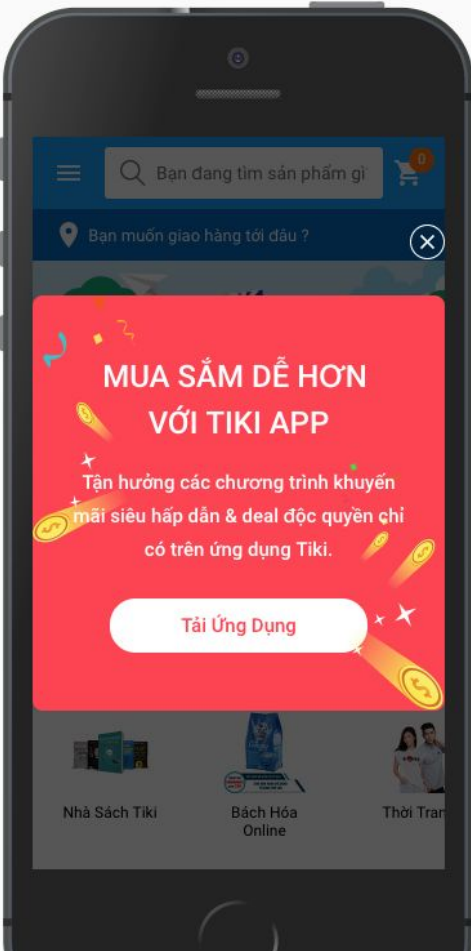

Background color #00b7f1

Orientation portrait

Display standalone

Icons

96x96
image/png



Tiki

Secure | https://shopee.vn

320 x 568

Elements Console Sources Network Performance Application >>

Application

- Manifest
- Service Workers
- Clear storage

Storage

- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies

Cache

- Cache Storage
- Application Cache

Frames

- top

App Manifest

</m/assets/manifest.30a3eae....json>

Identity [Add to homescreen](#)

Name Shopee

Short name Shopee

Presentation

Start URL /

Theme color #FF5722

Background color #ededed



Orientation portrait

Display standalone

Icons

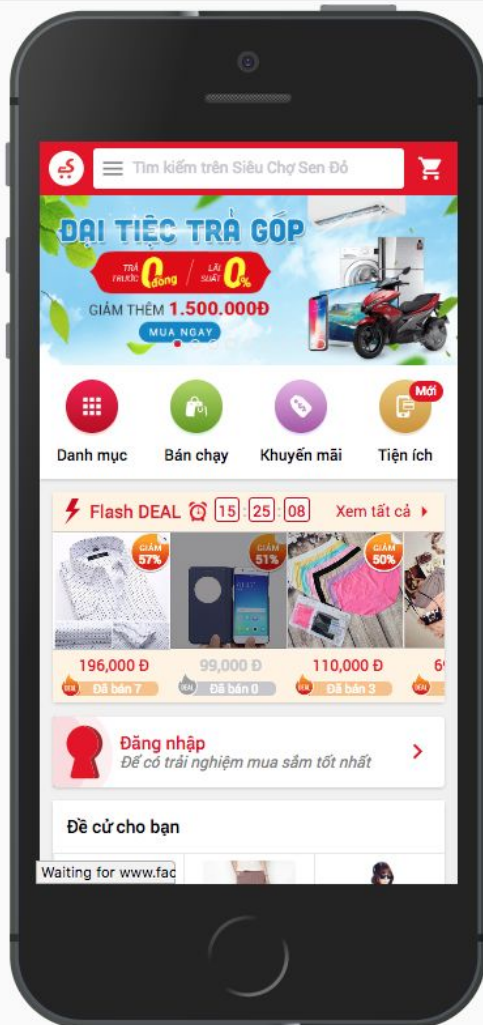
512x512

image/png



The image shows a mobile app interface for Shopee. At the top, there's a search bar with the text 'P&G giảm đến 50% toàn s'. Below the search bar, there's a promotional banner for 'Super Brand Day' with a 'GIẢM GIÁ ĐẾN 30%' (Up to 30% off) discount. The main content area features a grid of icons for various shopping categories: Shopee Mart, Shopee Fashionista, Shopee Xu, Khuyến Mãi, Siêu Thị Điện Tử, Nạp Thẻ & Dịch Vụ, Rẻ Vô Địch, and Ưu Đãi Từ Đối Tác. Below this, there's another promotional banner for 'P&G' with a 'GIẢM GIÁ ĐẾN 50%' (Up to 50% off) discount. At the bottom, there's a section titled 'TÌM KIẾM PHỔ BIẾN' (Popular Searches) with categories like 'sơ-mi kiểu' (5k sản phẩm), 'áo-thun n...' (123 sản phẩm), 'áo nam' (446 sản phẩm), and 'quần nam' (146 sản phẩm).

Shopee



Application

- Manifest
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Storage

- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies

Cache

- Cache Storage
- Application Cache

Frames

- top

App Manifest

</manifest.json>

Identity

[Add to homescreen](#)

Name Sendo.vn

Short name Sendo.vn

Presentation

Start URL /?utm_source=pwa&utm_medium=a2hsTheme color ■ #e5101dBackground color ■ #e5101d

Orientation portrait

Display standalone

Icons

36x36



image/png

48x48




Sendo

← → ↻ Cong ty TNHH Cho Tot [VN] | https://www.chotot.com

320 x 568

Elements Console Sources Network Performance Application >> 7



Application

- Manifest
- Service Workers
- Clear storage

Storage

- Local Storage
- Session Storage
- IndexedDB
- Web SQL
- Cookies

Cache

- Cache Storage
- Application Cache

Frames

- top

App Manifest

</manifest.json>

Identity [Add to homescreen](#)

Name Chợ Tốt

Short name Chợ Tốt

Presentation

Start URL /

Theme color #FFBA00

Background color #FFBA00


Orientation

Display standalone

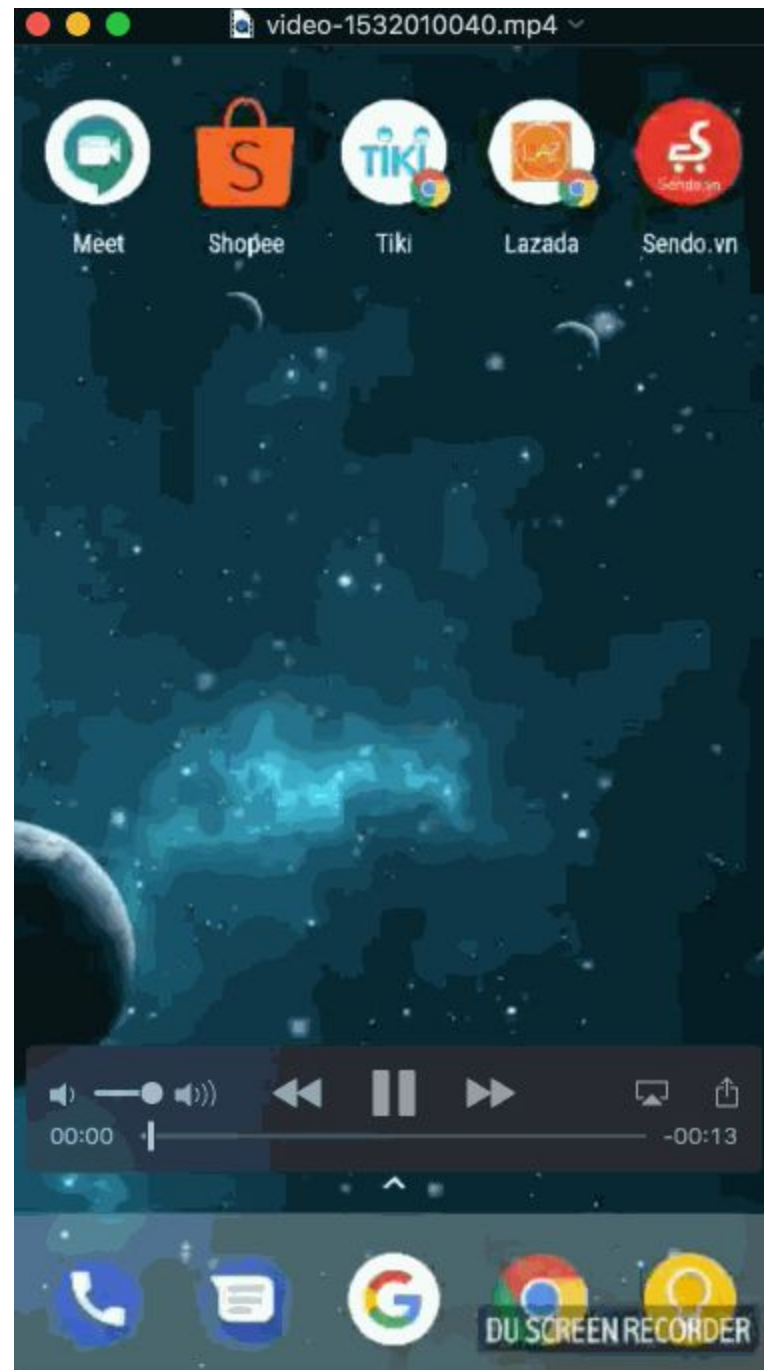
Icons

192x192

image/png



Chợ Tốt





x6

Web page load speed

+28%

Return rate

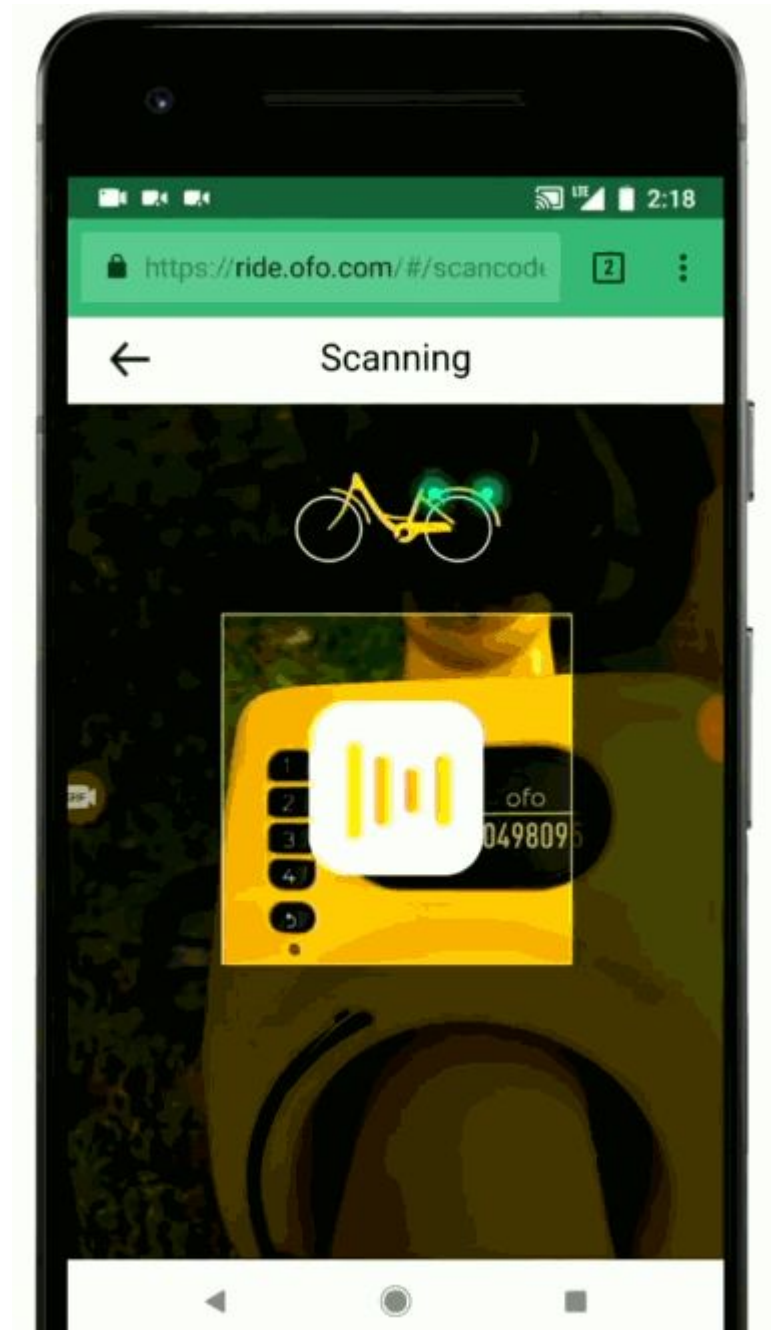
+100%

Conversion rate



- Geolocation API
- Camera API to scan QR code

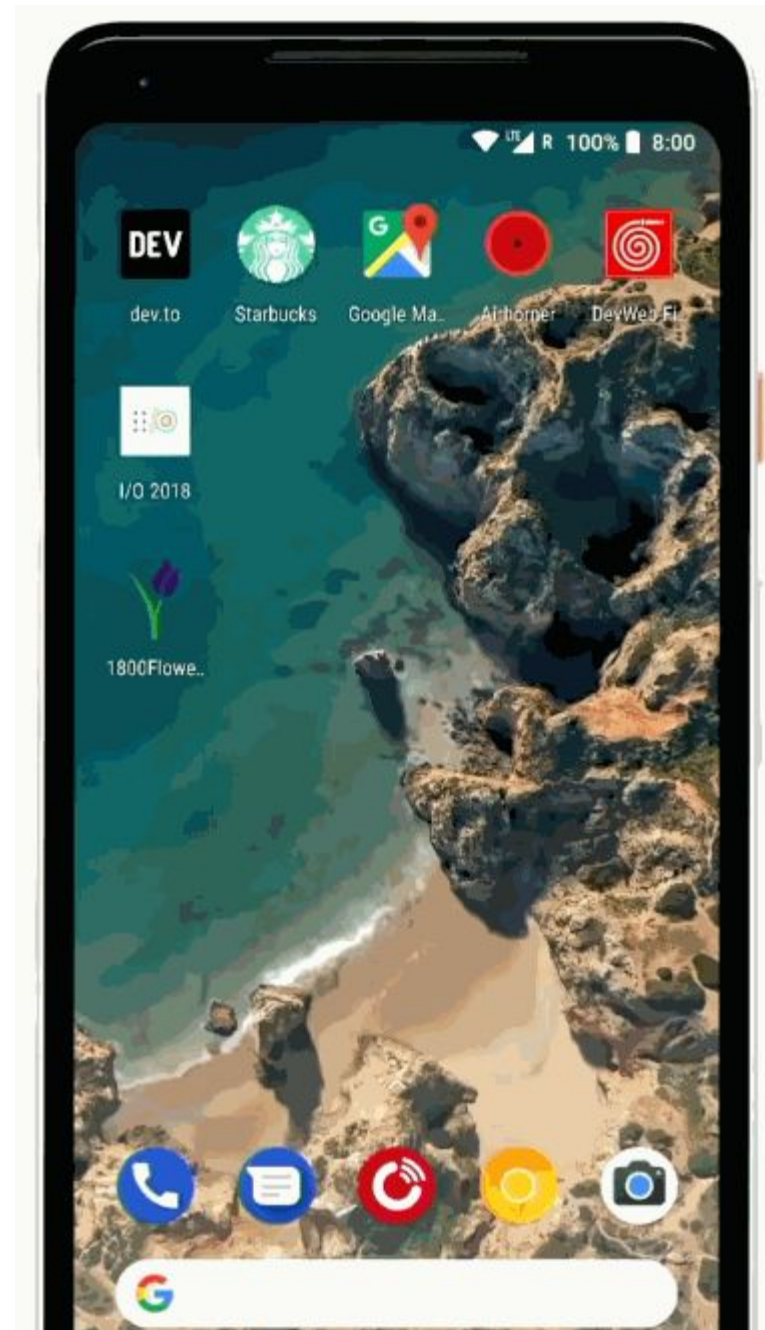
<https://ride.ofo.com/>



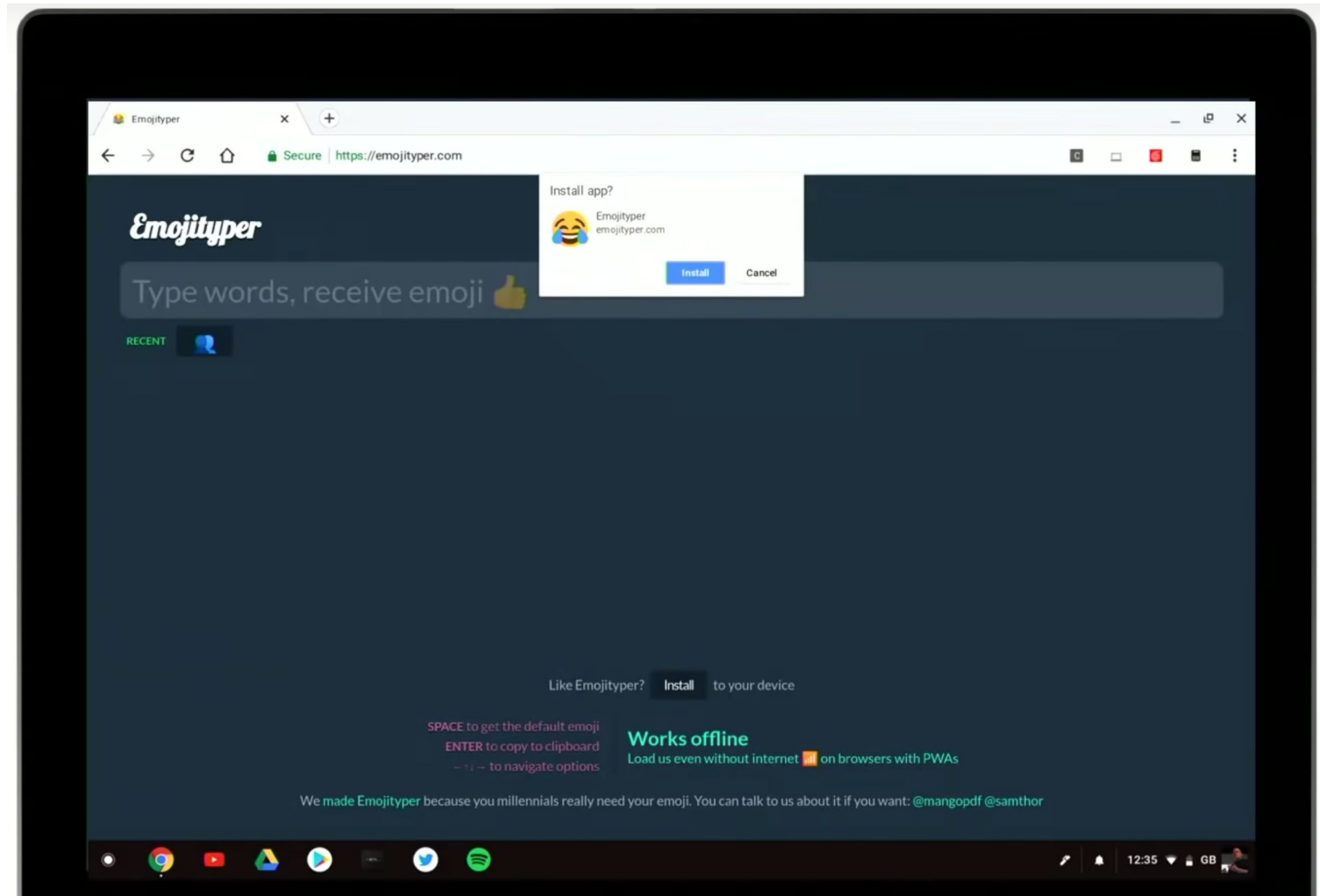


- Locate nearby stores
- Explore menu and make order

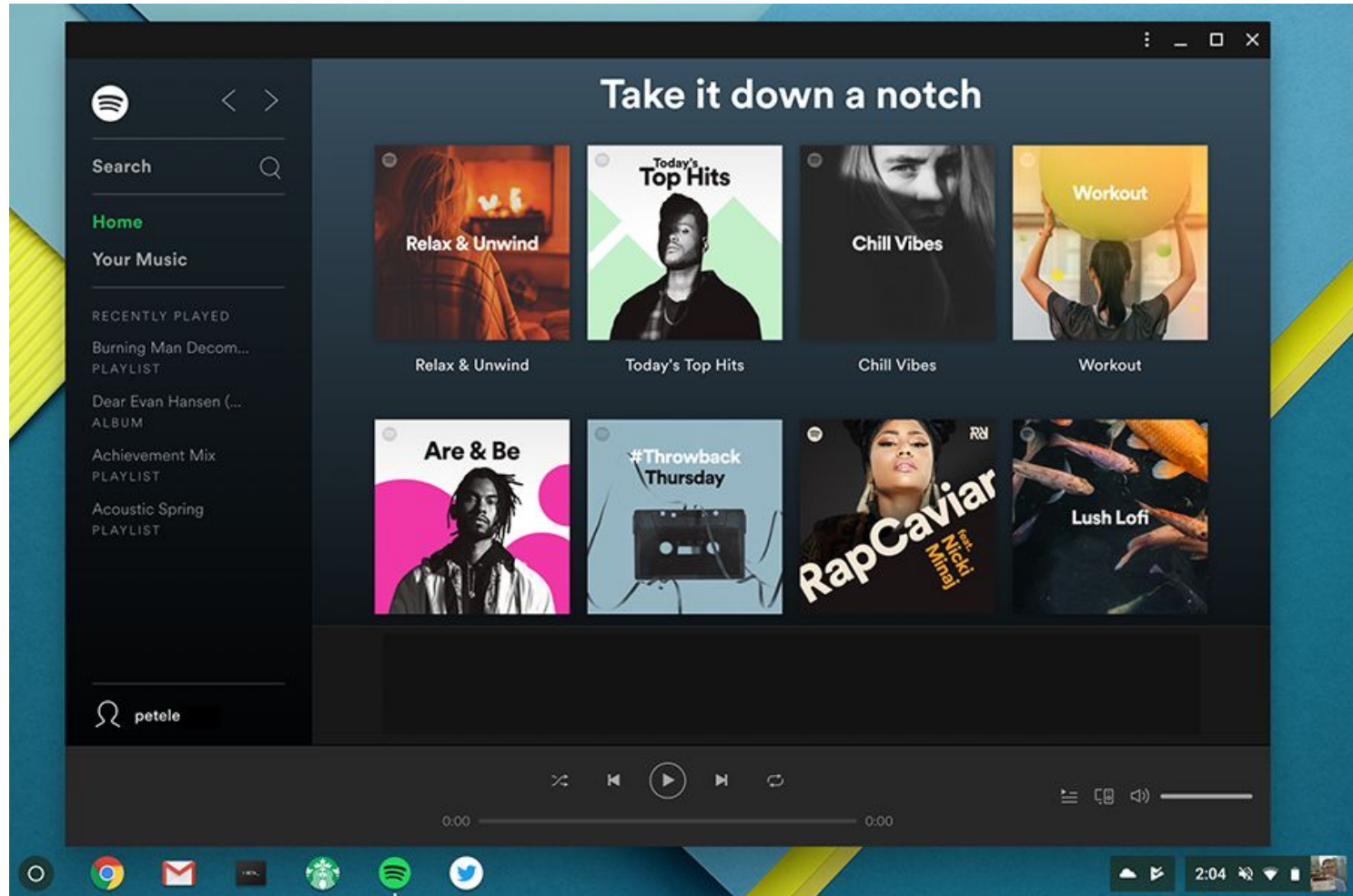
<https://app.starbucks.com/>



PWA for Desktop



PWA for Desktop



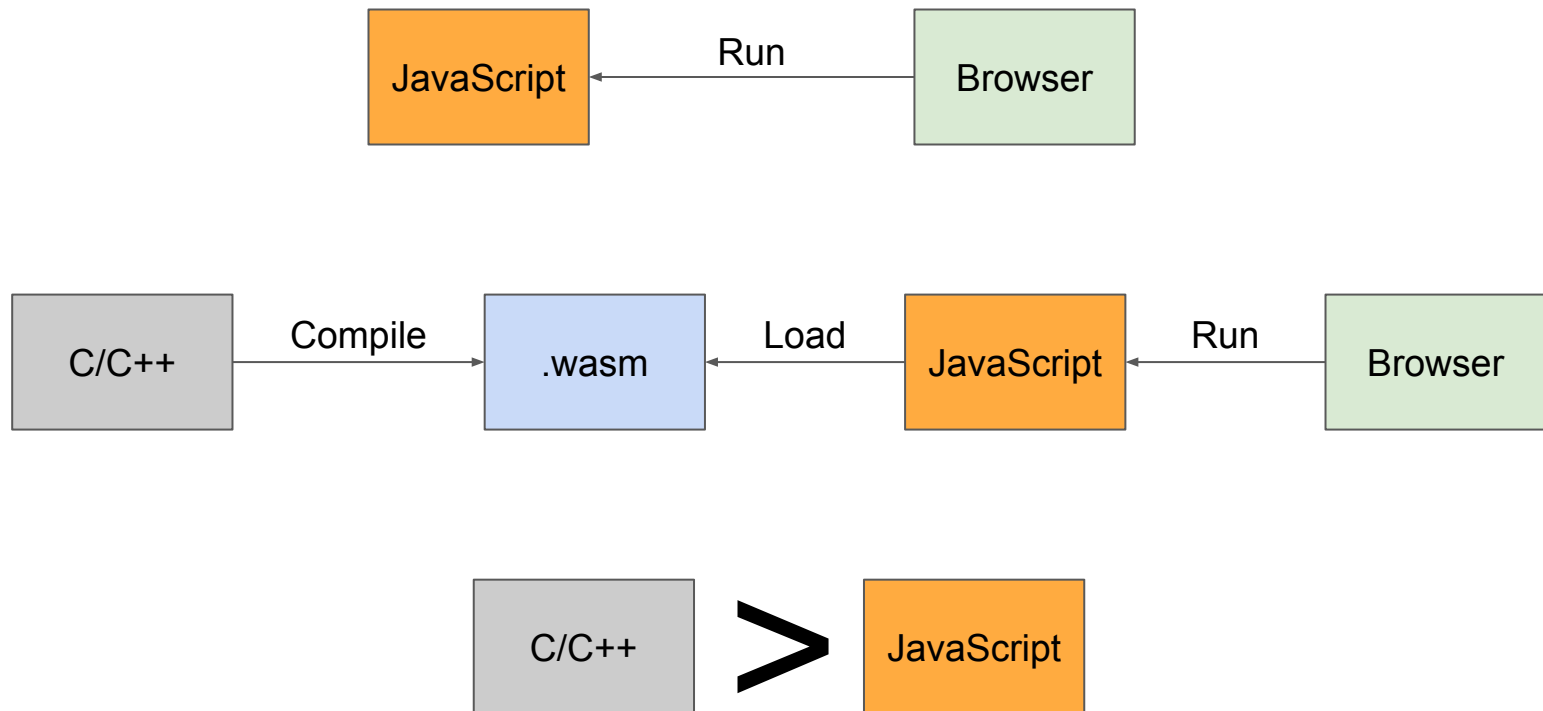
<https://open.spotify.com/>

Web is slow?

Web Assembly

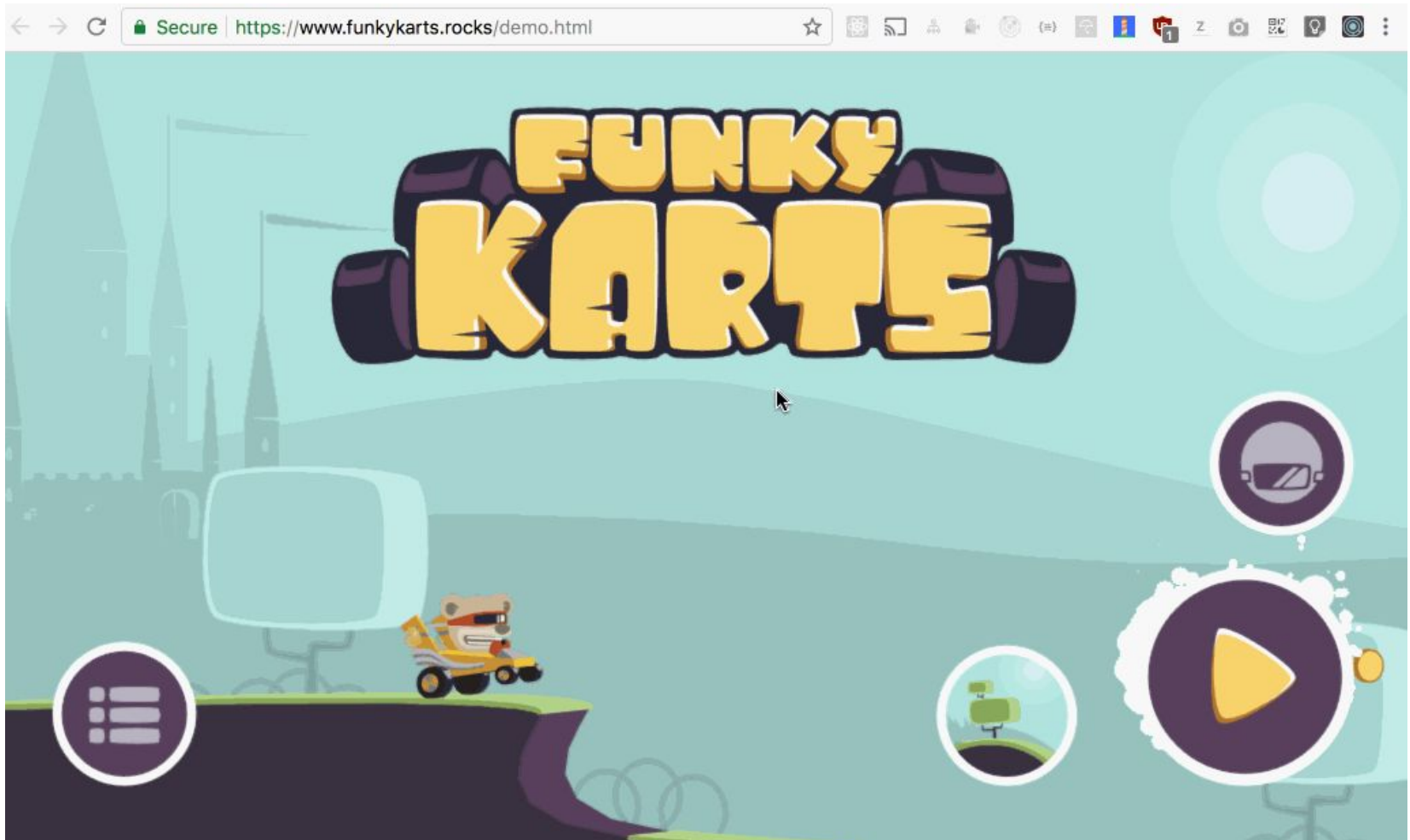
What is Web Assembly?

Web Assembly is a new cross-browser, low-level language. It's designed to run native C/C++ code in a tiny binary format.



Games in Web Assembly

<https://www.funkykarts.rocks/demo.html>





<https://web.autocad.com/#/filemanager.html>

← → ↻ Secure <https://web.autocad.com/#/canvas.html?pid=542783559> ☆

AUTODESK® AUTOCAD® | Home > Dog House Plan Sample.dwg (View Only)

Create and edit drawings with an AutoCAD subscription. [Learn More >](#) Already have a subscription?

Views

- Views
- Model
- Layout1
- Layout2

Prop.

Layers

Settings

The drawing displays three views of a dog house: a Floor Plan, a Front Elevation, and a Side Elevation. The Floor Plan shows a rectangular base with a central entrance. The Front Elevation shows a gabled roof with a central arched entrance. The Side Elevation shows the side profile of the dog house. Dimensions are provided for various parts of the structure. The drawing is titled "DOG HOUSE PLANS".

Chrome DevTools

Async debugging

Anync debugging ×

```
1  
2 setTimeout(() => {  
3   console.log('Hello Google IO Extended 2018!');  
4 }, 1000);  
5  
6 console.log('Have a nice day!')
```

{ } Line 6, Column 32

▶ ⌘+Enter

Async debugging



Async-first Debugging

Step into `setTimeout()`

Step into `.then()`

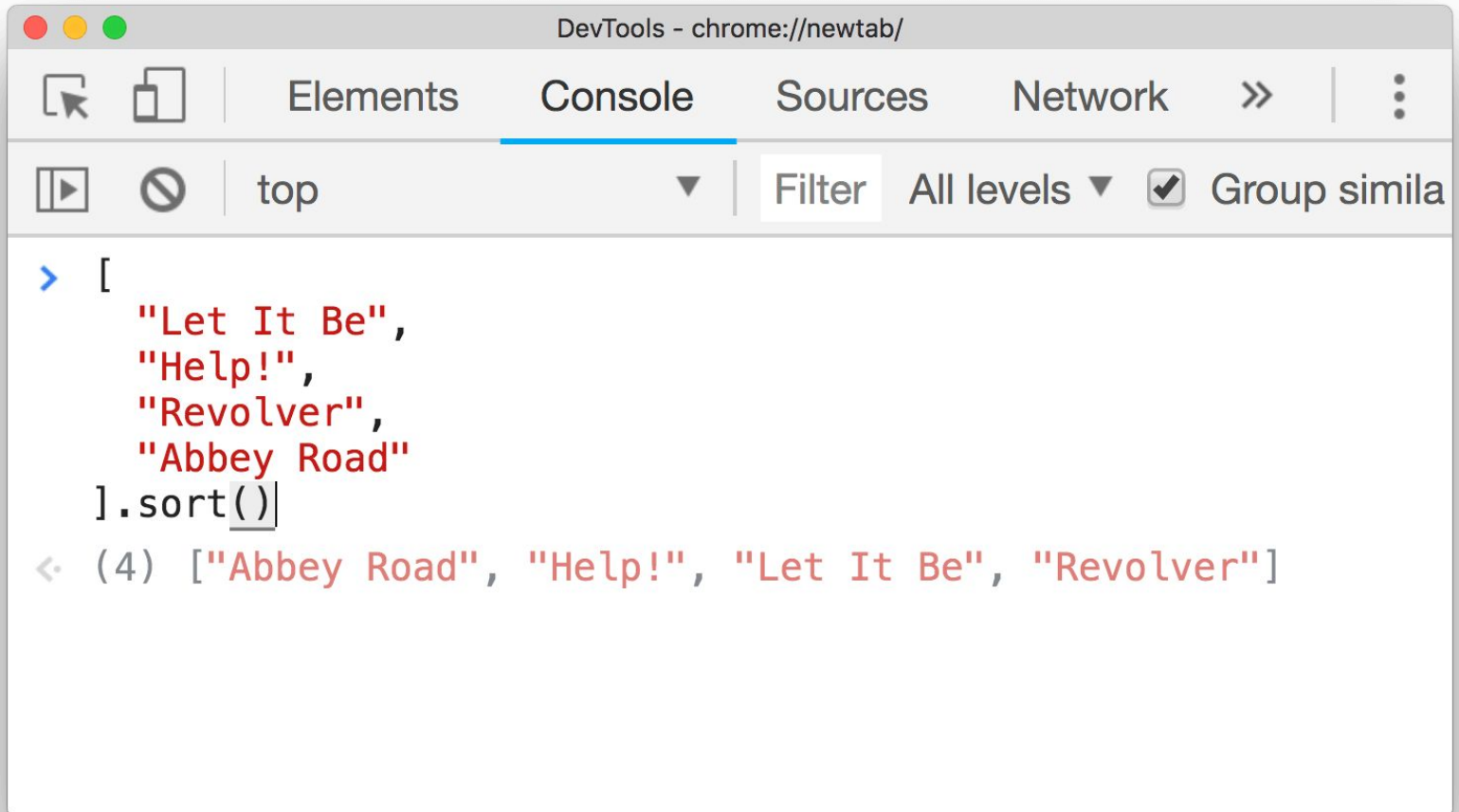
Step into `new Worker()`

Step across `.postMessage()`

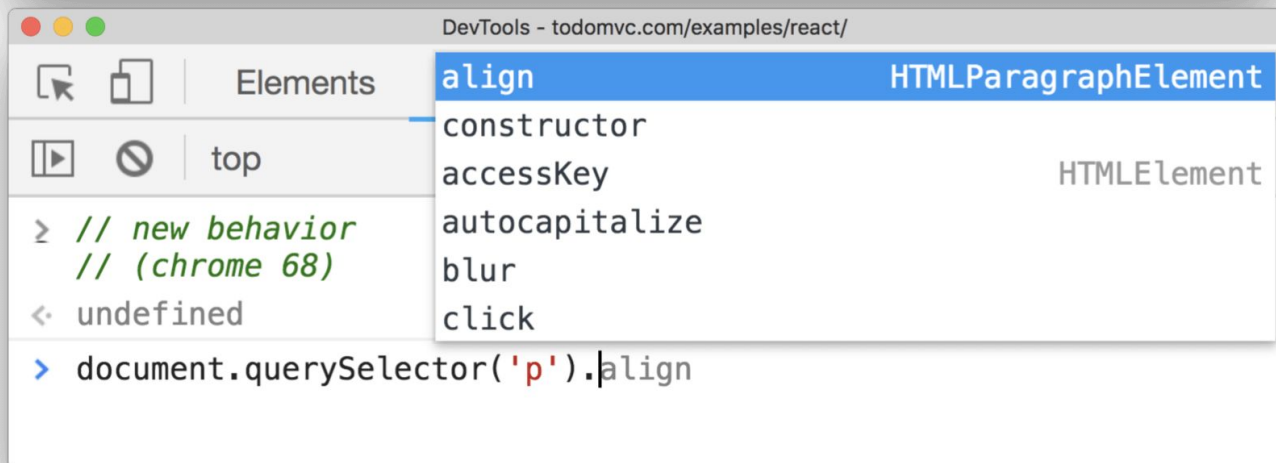
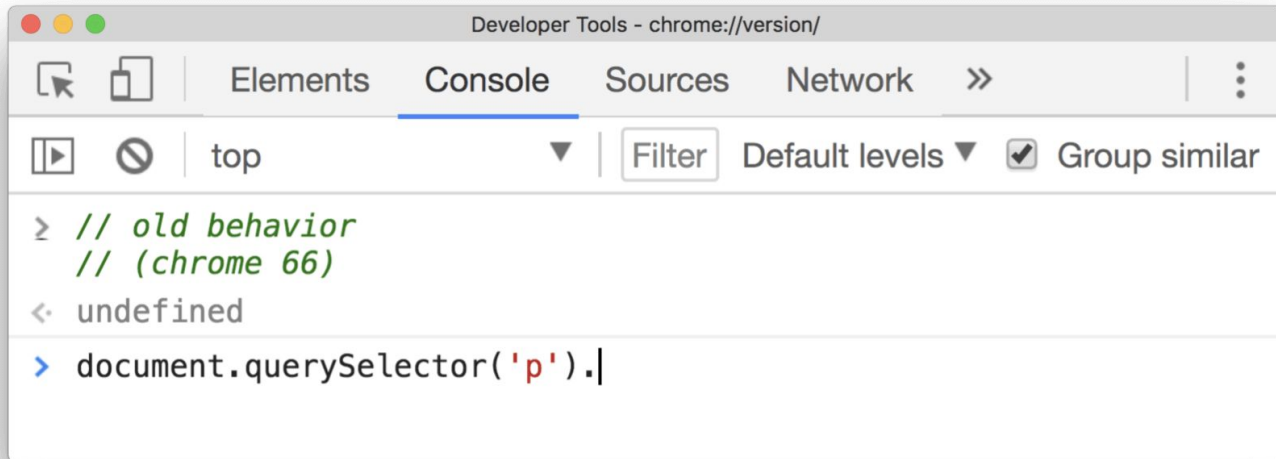
Top-level `await` in console

Ctrl-click async jump

Eager Evaluation



Autocomplete after function executions



Auditing tool

<https://www.google.com/gmail/about/>

May 8, 2018, 11:48 AM PDT • Runtime settings ▾



Performance



Progressive Web App



Accessibility



Best Practices



SEO

Score scale: ● 0-44 ● 45-74 ● 75-100

Performance



Metrics

First Contentful Paint

2,210 ms ✓

First Meaningful Paint

2,560 ms ✓

Speed Index

3,880 ms ✓

First CPU Idle

5,110 ms ⓘ



Chrome DevTools

<https://developers.google.com/web/updates/2018/05/devtools>

Accerelated Mobile Pages



amp



ALL

IMAGES

NEWS

VIDEOS

BOOKS

Accelerated Mobile Pages

<https://www.ampproject.org>

⚡ AMP - The Accelerated Mobile Pages (AMP) Project is an open source initiative that makes it easy for publishers ...

Accelerated Mobile Pages Project



The Accelerated Mobile Page Project is a type of HTML, optimized for mobile web browsing. The AMP-HTML uses special code to load webpages immediately when clicked on in a search engine



amp



ALL

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Accelerated Mobile Pages

<https://www.ampproject.org>

⚡ AMP - The Accelerated Mobile Pages (AMP) Project is an open source initiative that makes it easy for publishers ...

Accelerated Mobile Pages Project



The Accelerated Mobile Page Project is a type of HTML, optimized for mobile web browsing. The AMP-HTML uses special code to load webpages immediately when clicked on in a search engine.
[Wikipedia](#)

AMP Stories

<https://www.ampproject.org/stories/>

Example stories:

<https://edition.cnn.com/ampstories/us/still-missing-cassini-heres-what-else-is-out-there>

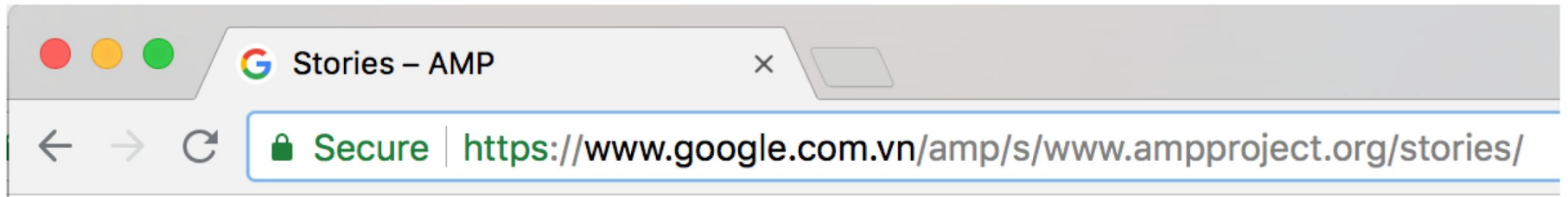


Progressive UX



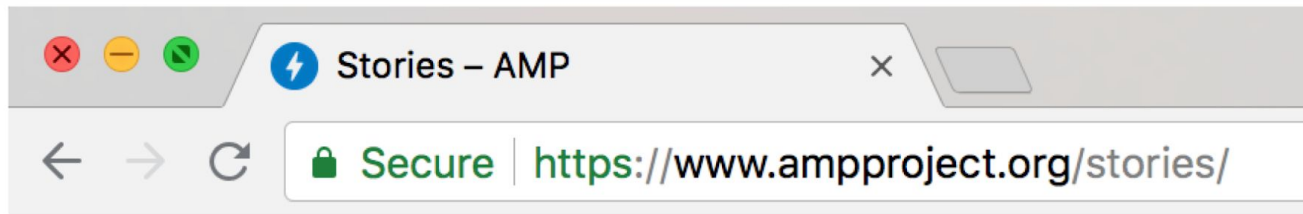
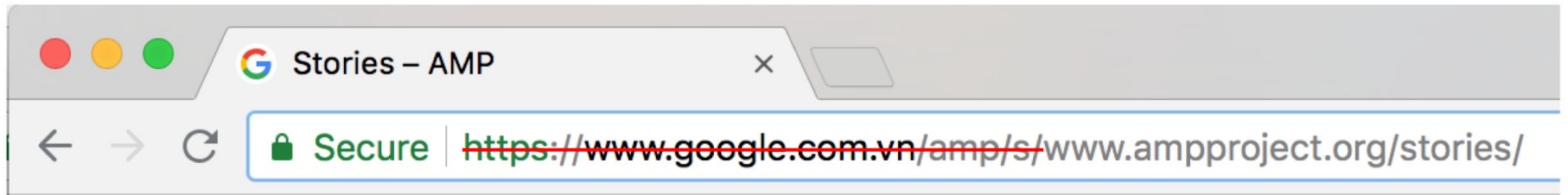
Web Packaging

No more google.com/amp URLs



Web Packaging

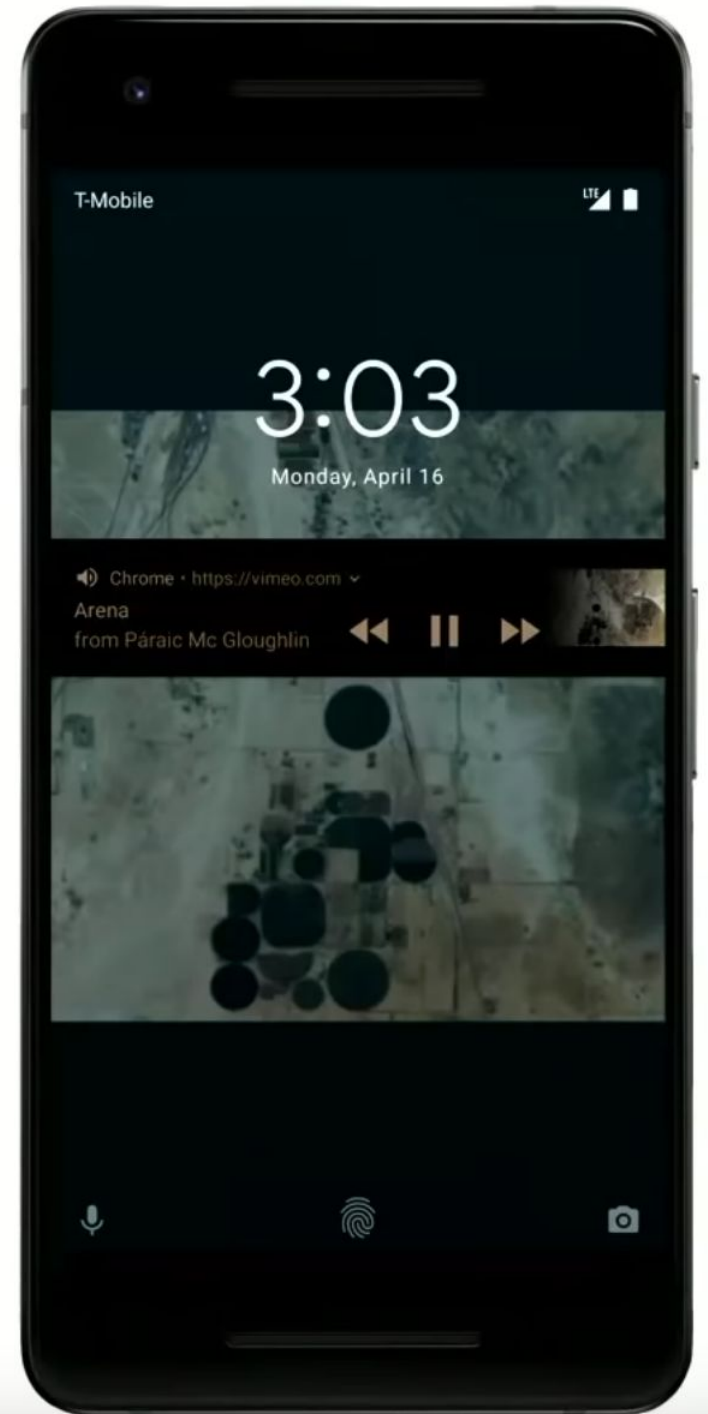
No more google.com/amp URLs



Web Media

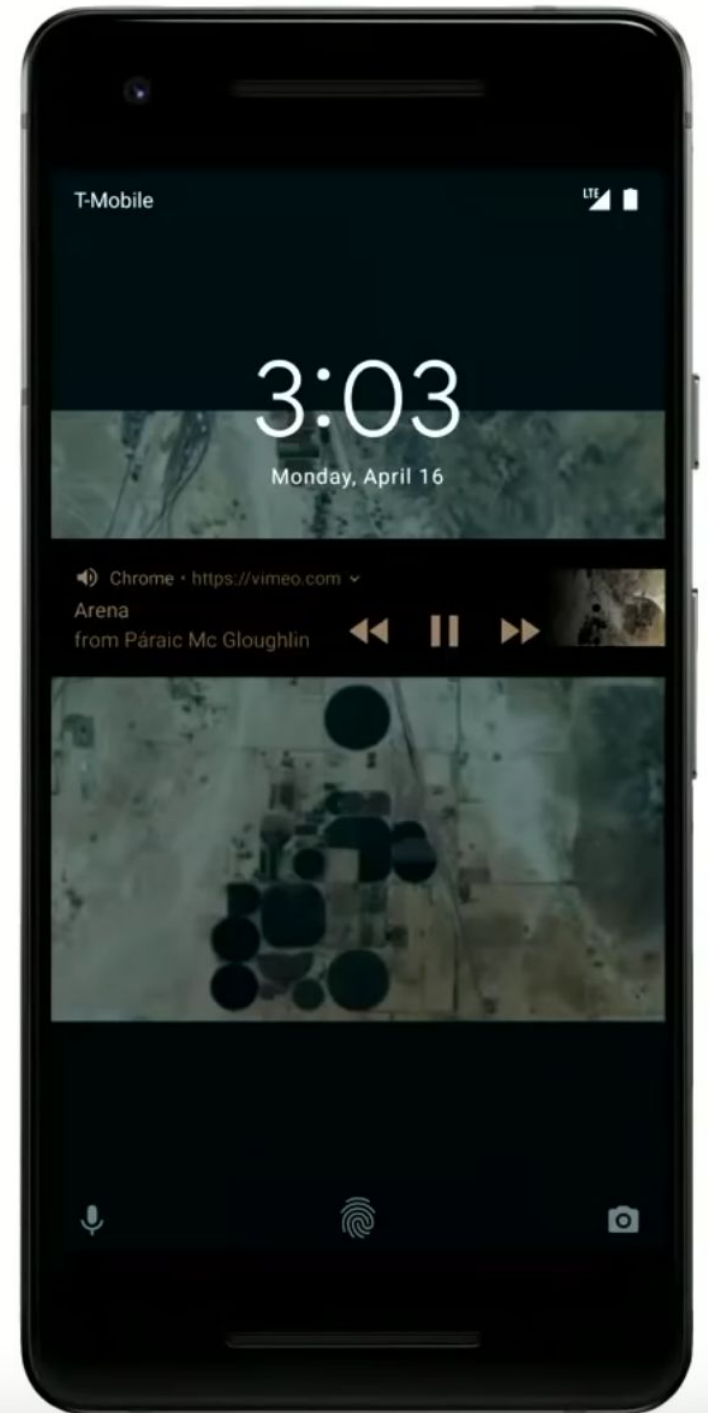
Media Session API

Integration with lock screen controls



Media Capabilities API

Provide information on capabilities of supporting media features on the device.



Picture-in-Picture

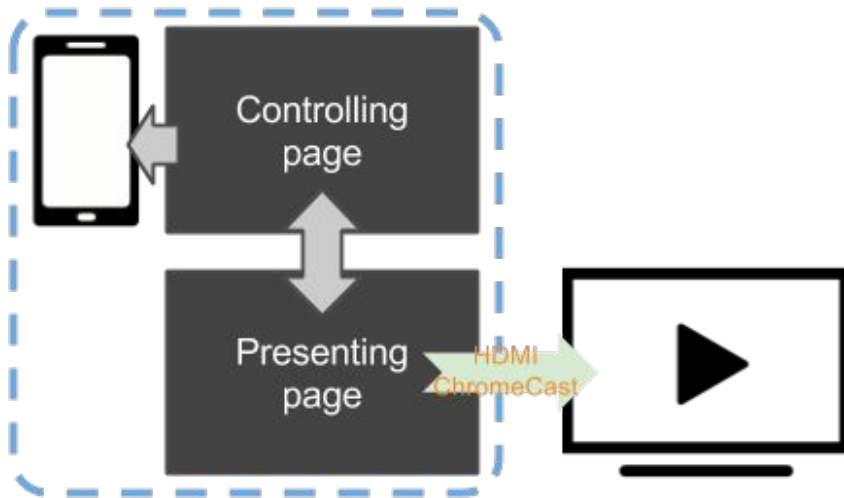
Allow the website to trigger Picture in Picture on a video element via a user gesture.



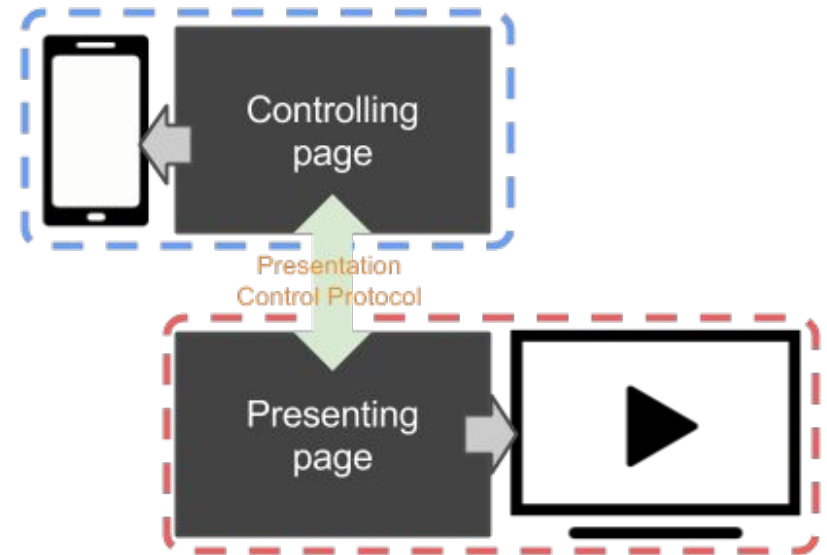
Presentation API

Explicitly control what to be shown on secondary display

1-UA mode



2-UAs mode



More...

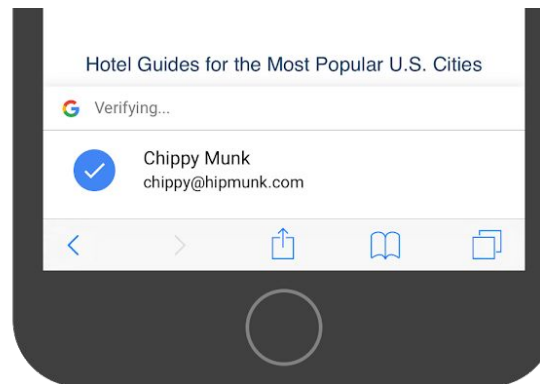
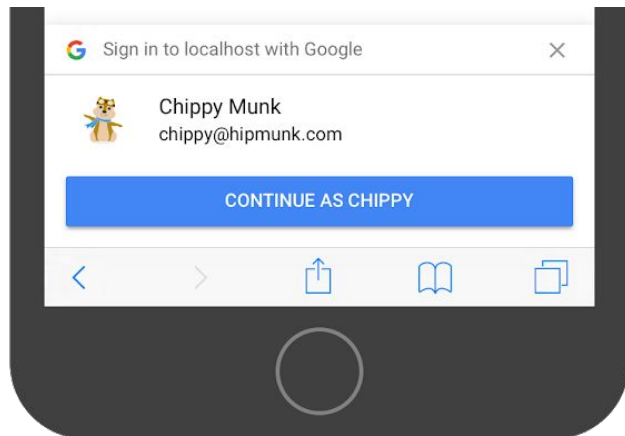
Workbox

- A library
- Common usage of service workers -> easier
- Really recommend to use this instead of writing your own

One-tap sign-up & Auto sign-in

- Sign up & sign in is friction for users
- A library
- Early access
- No typing, no identity provider, no password
- User return to site -> sign-in easily
- Use the existing user sign-in on the device (like Gmail)
- Use Credential Managers web standard

<https://developers.google.com/identity/one-tap/web/>



One-tap sign- Auto sign-in



1-tap sign-up anywhere



Frictionless sign-in
across devices & platform

Puppeteer

Stars on GitHub: > 30,000

Many use cases, integrate Chrome into your workflow

600 npm projects

Web Components

<https://custom-elements-everywhere.com/>

- Web Components specifications.
- Give developers the ability to define their own HTML elements
-

Angular 6.0

- Angular Elements: will give us the ability to use our Angular components in other environments (like a simple jQuery app or VueJS app)
- New Rendering Engine: Ivy
- Locality
- Tree Shaking
- ...



Angular 6.0

Polymer 3.0

- Supports ES module and npm
- Lit-html



Polymer 3.0

Thank you