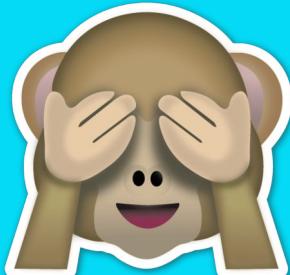
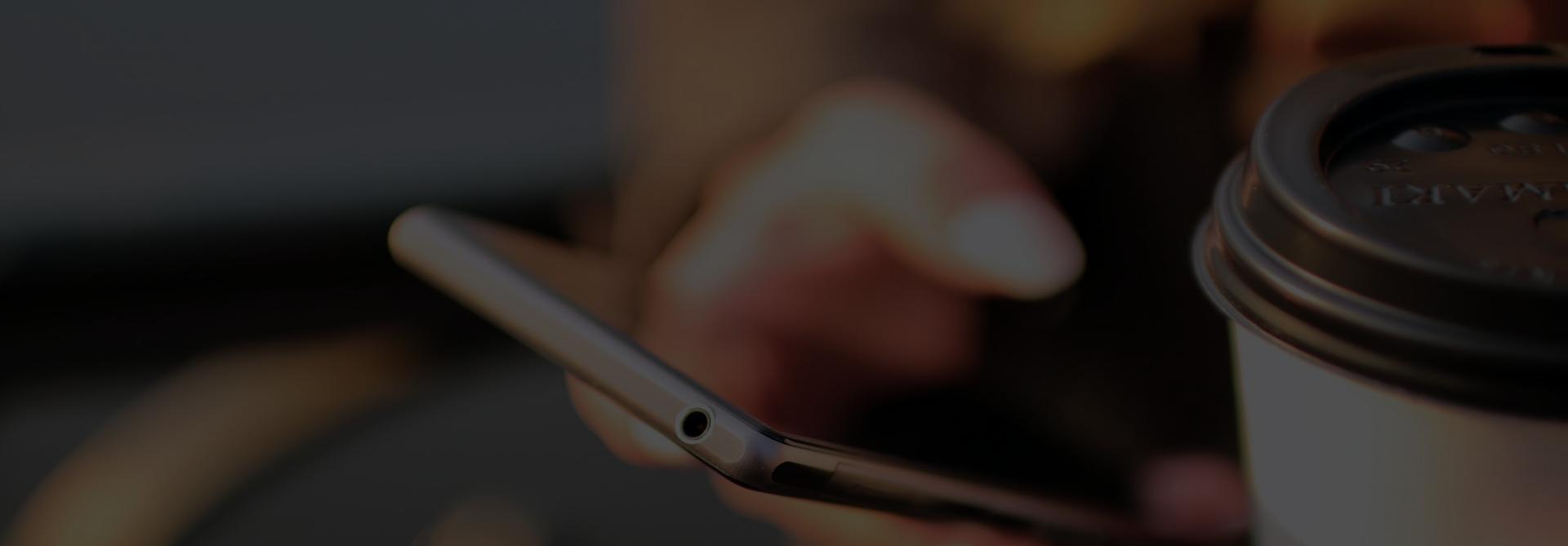


PROGRESSIVE WEB APPS

PROGRESSIVE WEB APPS

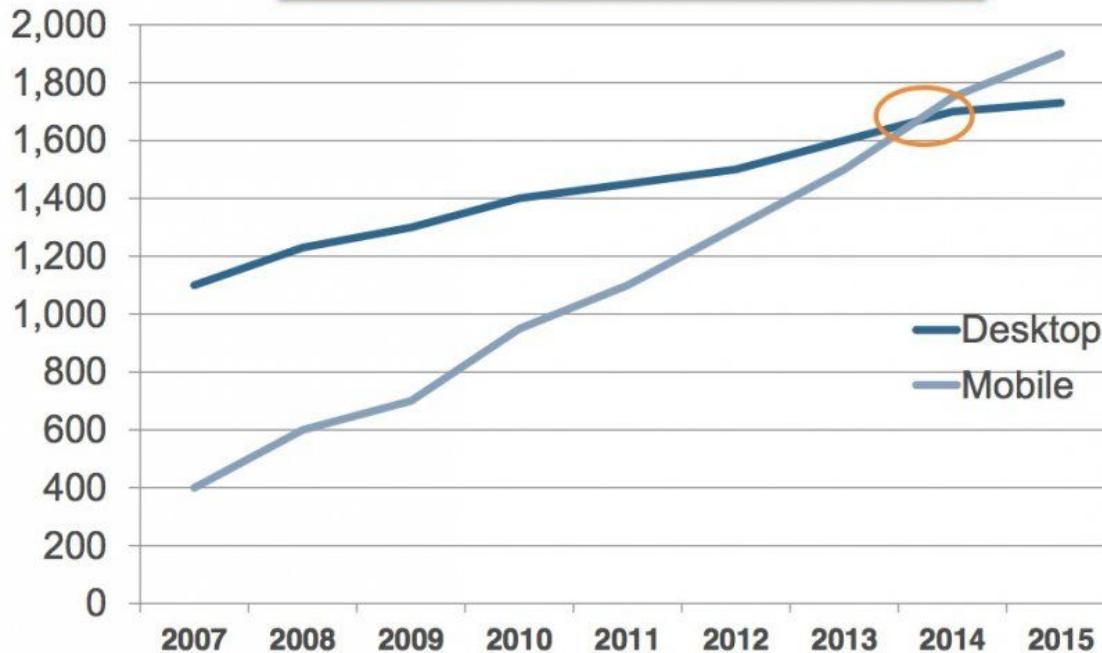




Progressive Web Apps

Сергей Пугачёв, Google

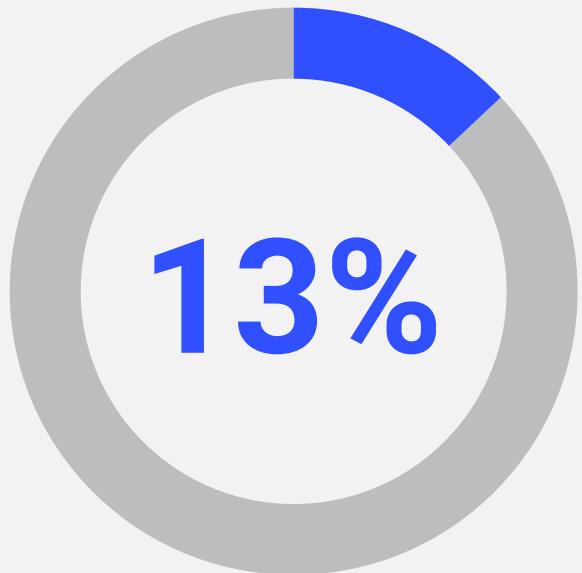
Number of Global Users (Millions)



© comScore, Inc. Proprietary and Confidential.

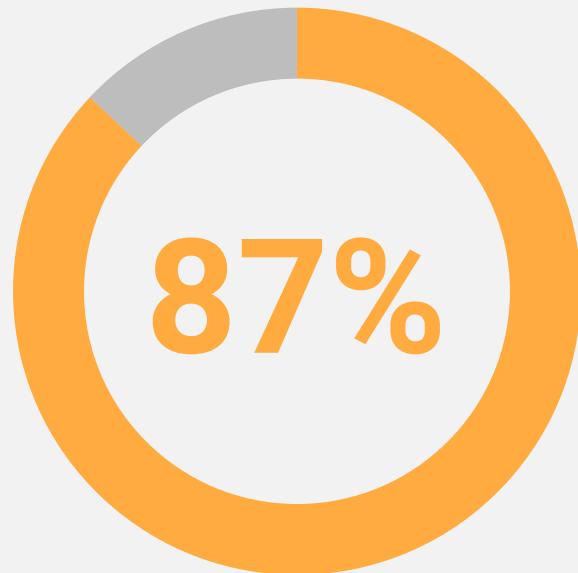
24

Source: Morgan Stanley Research



Mobile web

vs.



Apps

80%

ВРЕМЕНИ ПОЛЬЗОВАТЕЛИ
ПРОВОДЯТ В
3 (ТРЕХ) ПРИЛОЖЕНИЯХ

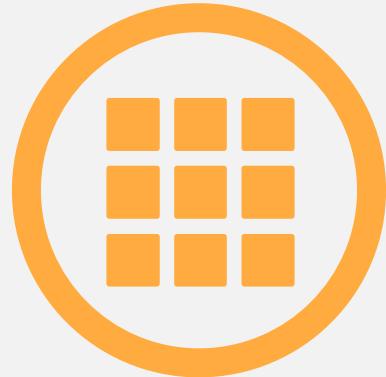
ноль
ПРИЛОЖЕНИЙ
ПОЛЬЗОВАТЕЛИ В СРЕДНЕМ
УСТАНАВЛИВАЮТ В МЕСЯЦ

Source: comScore Mobile Matrix, U.S., Age 18+, June 2015

100+

САЙТОВ ПОЛЬЗОВАТЕЛИ
ПОСЕЩАЮТ ЗА МЕСЯЦ

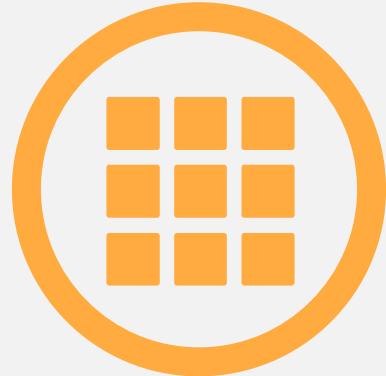
Возможности



Охват



Возможности



Охват



Progressive Web Apps

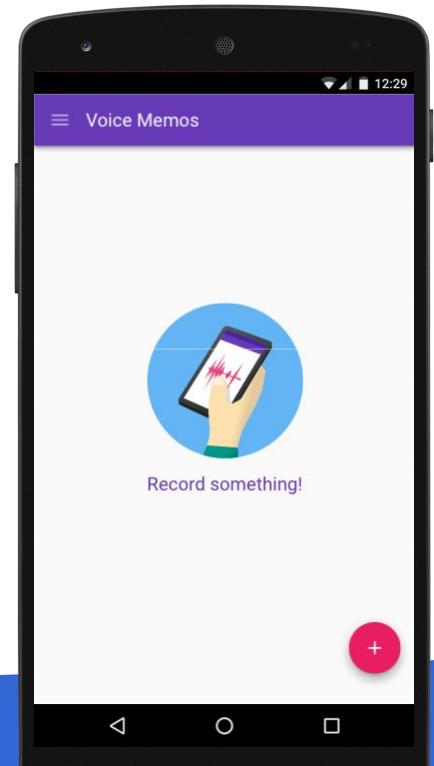
подход, практики и технологии,

позволяющие создавать

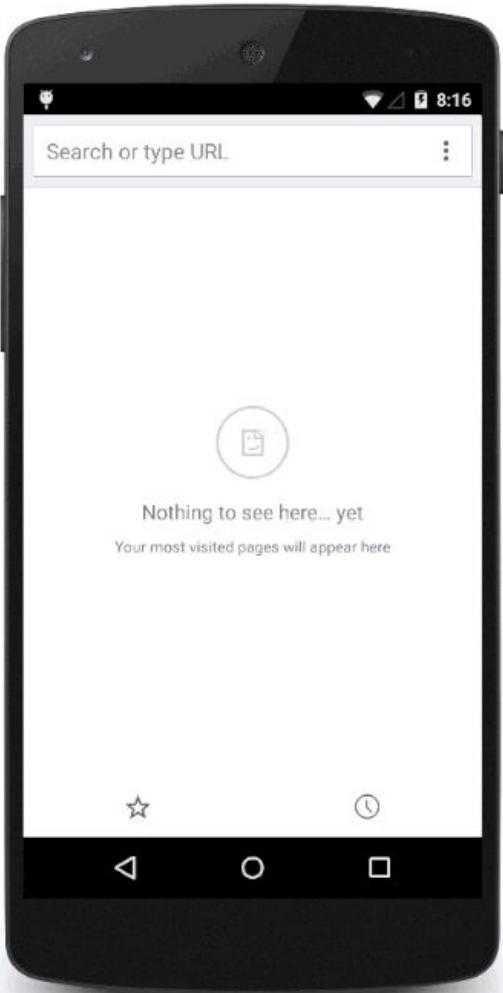
Web приложения, сравнимые с Native

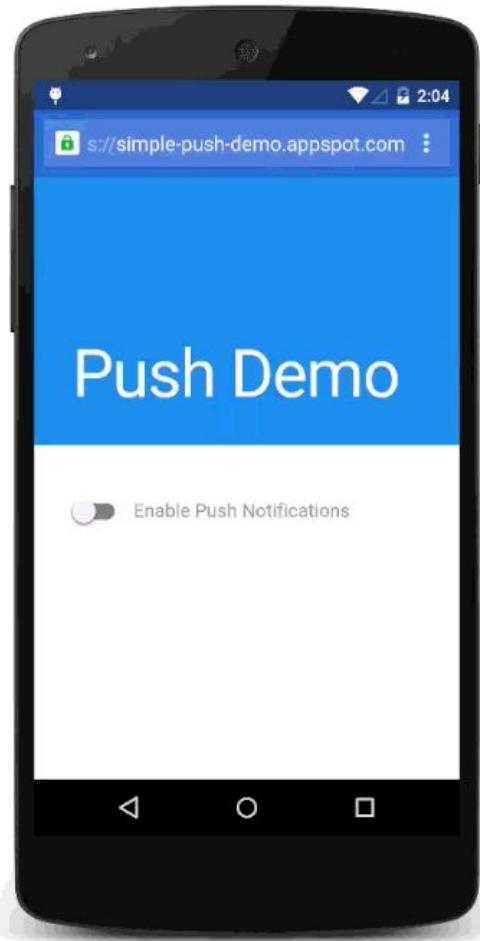
Progressive Web Apps

- **Reliable:** Быстрая загрузка, работа оффлайн и с плохими сетями
- **Fast:** Быстрые анимации, прокрутка и навигация
- **Engaging**
 - Иконка на Home Screen, нет окна браузера, поддержка заставок (splash screen)
 - Вовлечение с помощью Push-нотификаций



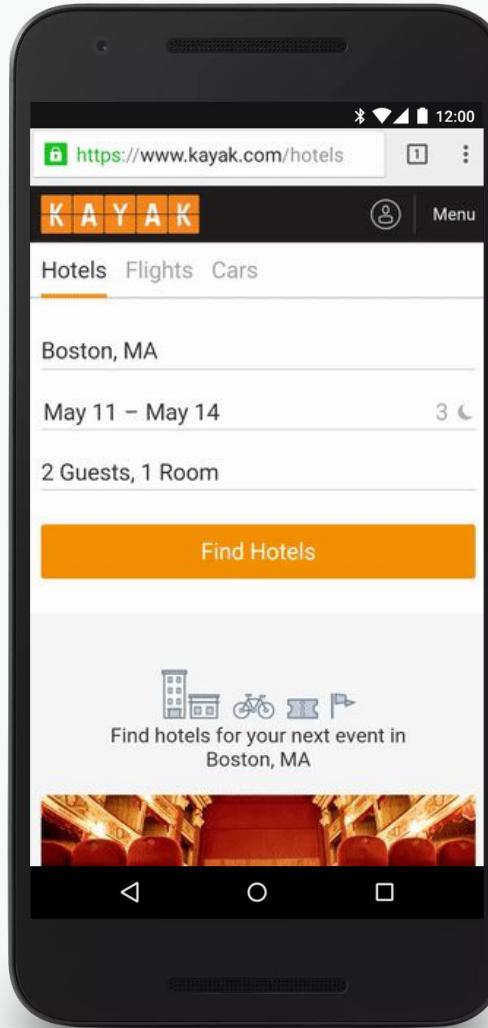




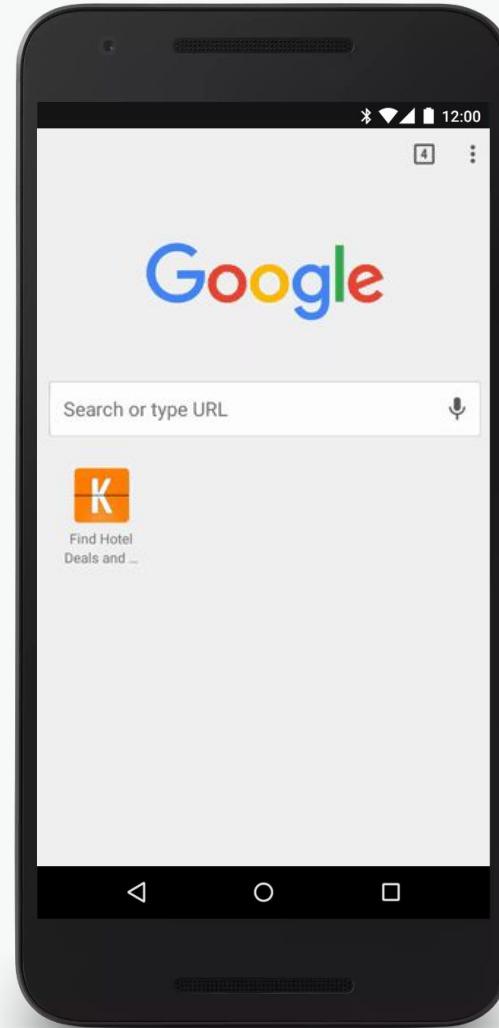


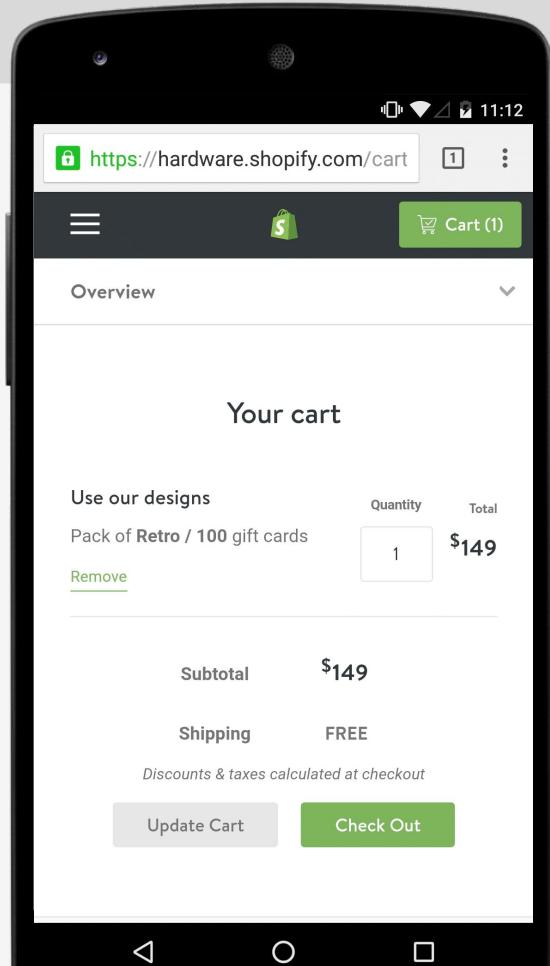
Credentials API

ВХОД В ОДИН КЛИК



Автоматический вход





Web Payments API

```
let supportedInstruments = [  
    supportedMethods: ['visa', 'mastercard', 'amex']  
};
```

```
let details = {  
    displayItems: [  
        label: 'Original donation amount',  
        amount: { currency: 'USD', value: '65.00' }  
    ]  
};
```

```
let options = { requestShipping: true,  
    requestPayerEmail: true, requestPayerPhone: true };
```

```
let request = new PaymentRequest(  
    supportedInstruments, details, options);
```

```
request.show().then(result => {});
```

Demo Background Sync



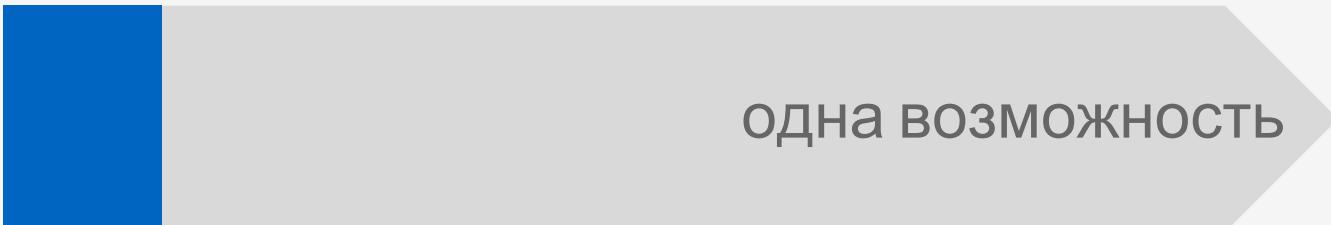
Подход к созданию PWA



с нуля



упрощённая версия



одна возможность

Search the store

Apps

Games

Extensions

Themes

TYPES

 Chrome Apps Websites

CATEGORIES

 All

FEATURES

 Runs Offline By Google Free Available fo Works with

Lighthouse

offered by [lighthouse-extension-owners](#)

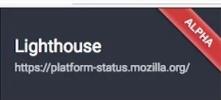
(9)

[Developer Tools](#)

4,198 users

[+ ADD TO CHROME](#)[OVERVIEW](#)[REVIEWS](#)[SUPPORT](#)[RELATED](#)[G+1](#)

11



Progressive Web App

These audits validate the aspects of a Progressive Web App.

99 / 100

App can load on offline/flaky connections

Ensuring your web app can respond when the network connection is unavailable or flaky is critical to providing your users a good experience. This is achieved through use of a [Service Worker](#).

- Has a registered Service Worker
- URL responds with a 200 when offline
- Manifest's start_url is in cache storage for offline use (Coming soon)

Yes

Yes

✓

Page load performance is fast

Users notice if sites and apps don't perform well. These top-level metrics capture the most important perceived performance concerns.

- First meaningful paint (target value: 1,000ms)
- Speed Index (target value: 1,000)
- Content scrolls at 60fps (Coming soon)
- Touch input gets a response in < 150ms (Coming soon)
- App is interactive without jank after the first meaningful paint (Coming soon)

100 (1019.19ms)

85

(2660)

✓

✓

✓

✓

Network connection is secure

Security is an important part of the web for both developers and users. Moving forward, Transport Layer Security (TLS) support will be required for many APIs.



Compatible with your device

Lighthouse

Quick-start guide on using Lighthouse:
<http://bit.ly/lighthouse-quickstart>

Repo and details:
<https://github.com/GoogleChrome/lighthouse>

[Website](#)[Report Abuse](#)

Additional Information

Version: 1.1.4

Updated: September 19, 2016

Size: 628KiB

Language: English

Welcome to Codelabs!

Google Codelabs provide a guided, tutorial, hands-on coding experience. Most codelabs will step you through the process of building a small application, or adding a new feature to an existing application. They cover a wide range of topics such as Android Wear, Google Compute Engine, Project Tango, and Google APIs on iOS

[VIEW EVENTS](#)

POPULAR RECENT DURATION

Web



⌚ 1 min

Chromecast elements



⌚ 26 min

Easy Checkout Forms with Autofill &
<gold-elements>



⌚ 28 min

Build a Mobile-First Google Drive
Client

codelabs.developers.google.com

FREE COURSE

Intro to Progressive Web Apps by **Google**

Web Apps for the Next Billion Users

[START FREE COURSE](#)

About this Course

In this course you'll get started working on your very first Progressive Web App - a web app that can take advantage of many of the features native applications have enjoyed. You'll also get more experience in creating a web app that works

NANODEGREE PROGRAM

Senior Web Developer by **Google**

Build Progressive Web Applications

Accelerate your career with the credential that fast-tracks you to job success. [»»»](#)

COURSE COST

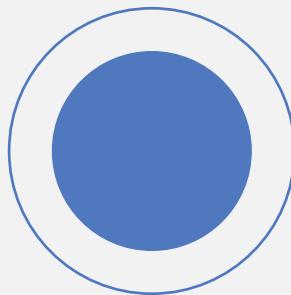
Free

TIMELINE

Approx. 2 weeks

SKILL LEVEL

Приложения должны быть...



Reliable

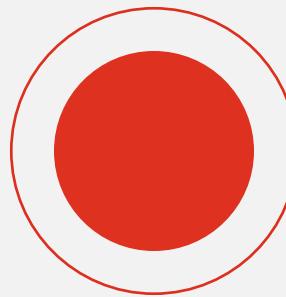
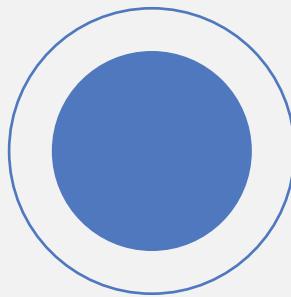


Fast



Engaging

Приложения должны быть...



Reliable

HTTPS решение по умолчанию

всё больше API, включая
геолокацию и PWA поддерживаю **ТОЛЬКО** HTTPS



Welcome to the glorious era of

A yellow background featuring the text "HTTP/2" in large red letters. The text is flanked by two sets of three-pointed red stars, one set on each side of the word.

...but what is it?

Round Trips

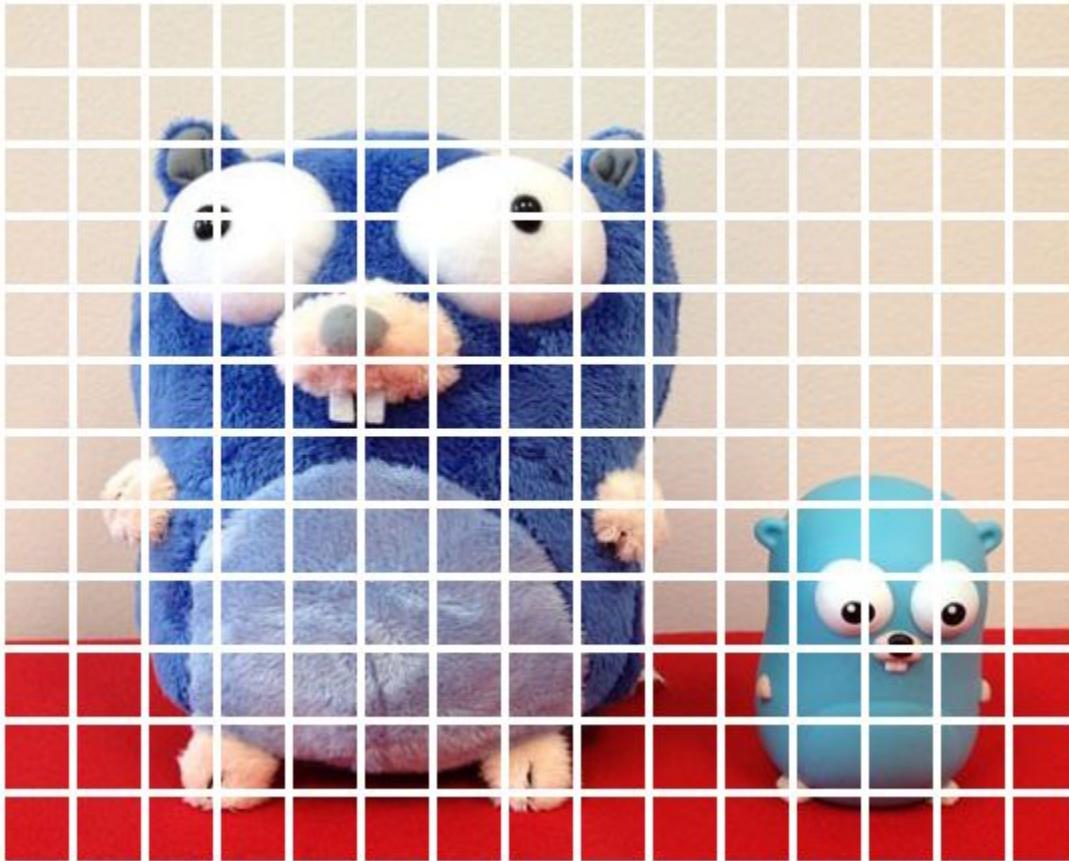
+50ms @WiFi
+500ms @3G
+2500ms @2G

HTTP/2



HTTP 1.1





A grid of 180 tiled images is below. Compare:

[HTTP/2, 0 latency] [HTTP/1, 0 latency]
[HTTP/2, 30ms latency] [HTTP/1, 30ms latency]
[HTTP/2, 200ms latency] [HTTP/1, 200ms latency]
[HTTP/2, 1s latency] [HTTP/1, 1s latency]

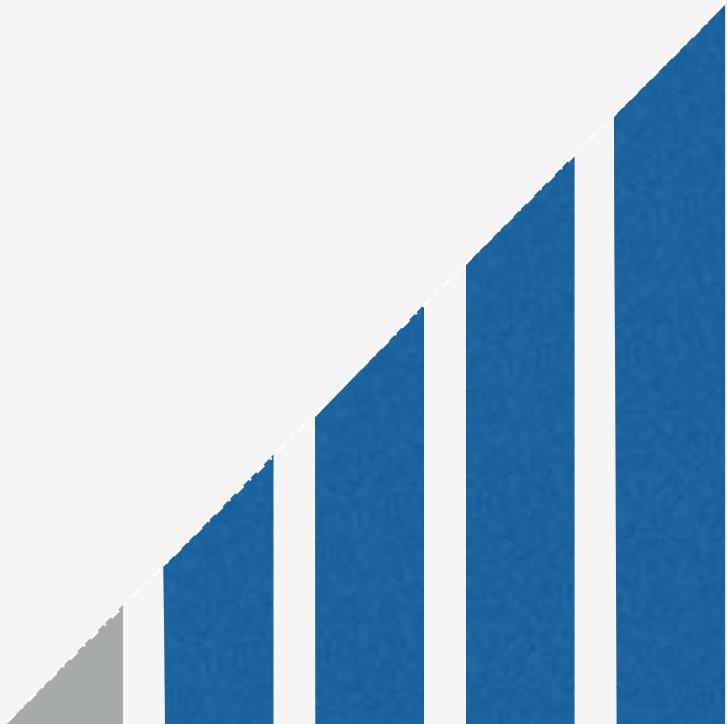
A grid of 180 tiled images is below. Compare:

[HTTP/2, 0 latency] [HTTP/1, 0 latency]
[HTTP/2, 30ms latency] [HTTP/1, 30ms latency]
[HTTP/2, 200ms latency] [HTTP/1, 200ms latency]
[HTTP/2, 1s latency] [HTTP/1, 1s latency]

60%

мобильных соединений
по всему миру - это 2G

Lie-Fi



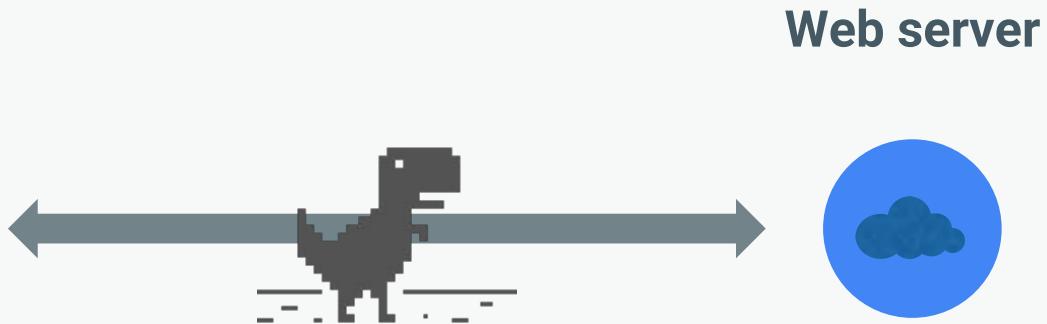
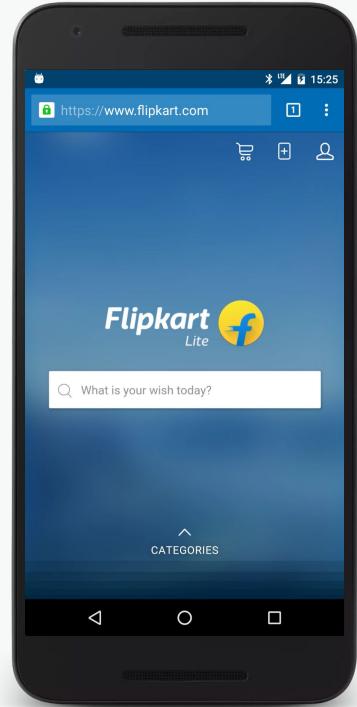


Unable to connect to the Internet

Google Chrome can't display the webpage because your computer isn't connected to the Internet.

Reliability - значит, что
эра динозавров прошла!

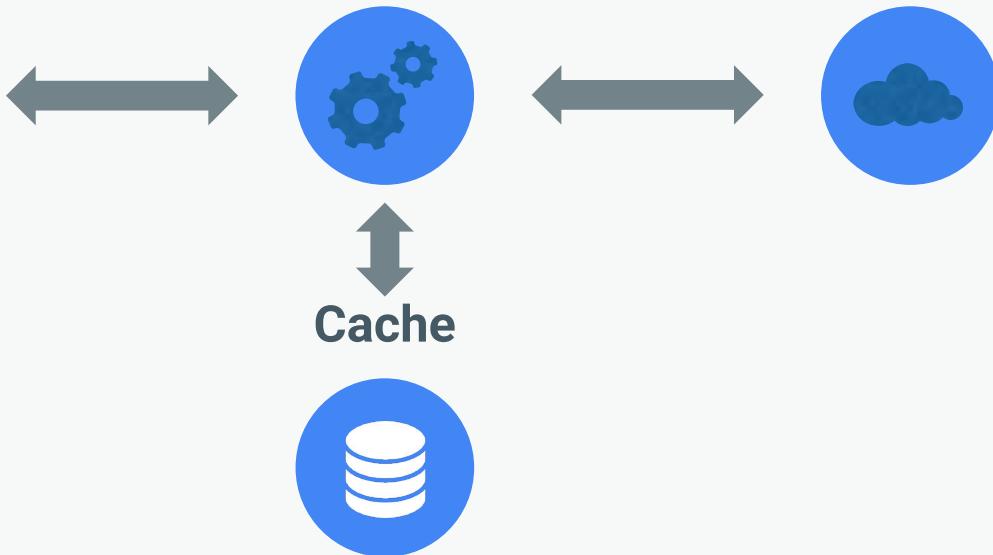


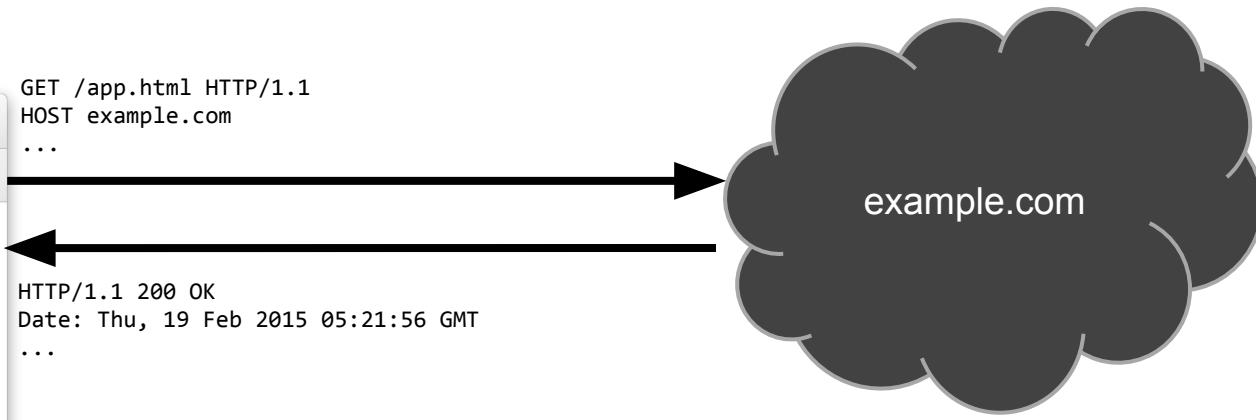
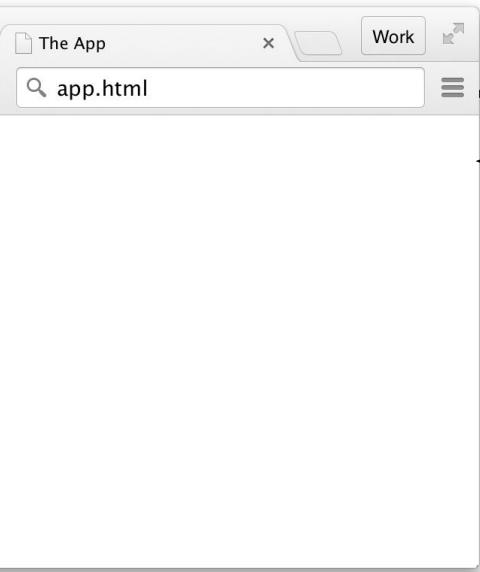


Client side proxy
(написан на JavaScript)

Service worker

Web server





The App

app.html



Work

GET /app.html HTTP/1.1
HOST example.com
...

GET /content.json HTTP/1.1
HOST example.com
...

```
// sw.js
onfetch = function(e) {
  if(e.request.url == "app.html") {
    e.respondWith(
      caches.match(e.request)
    );
  }

  if(e.request.url == "content.json") {
    // go to the network for updates,
    // meanwhile, use cached content
    fetch(...).then(function(r) {
      r.asJSON().then(function(json) {
        e.client.postMessage(json);
      });
    });
  }
};
```

GET /content.json HTTP/1.1
HOST example.com
...

HTTP/1.1 200 OK
Date: Thu, 19 Feb 2015...
...

example.com

```
// sw.js
self.addEventListener('install', function(e) {
  e.waitUntil(
    caches.open('my cache').then(function(cache) {
      return cache.addAll([
        '/',
        '/app.html',
        '/styles/main.css',
      ]);
    })
  );
});

self.addEventListener('fetch', function(event) {
  event.respondWith(
    caches.match(event.request).then(function(response) {
      return response || fetch(event.request);
    })
  );
});
```

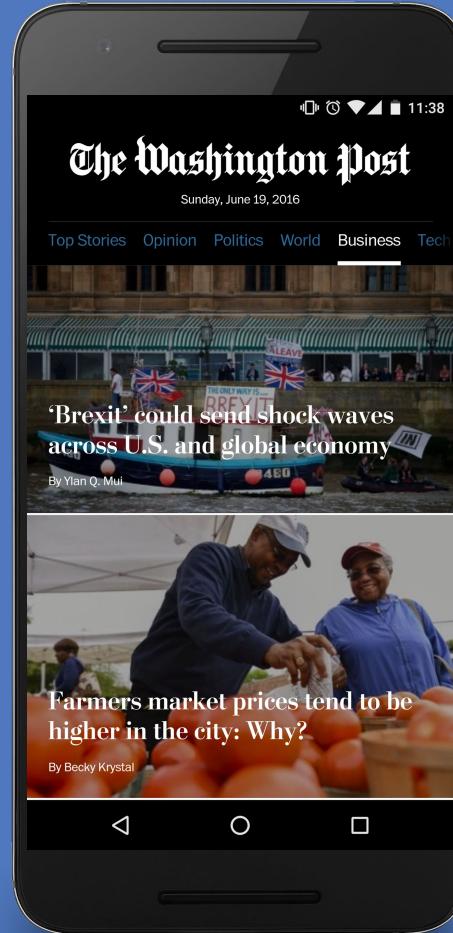


The Washington Post

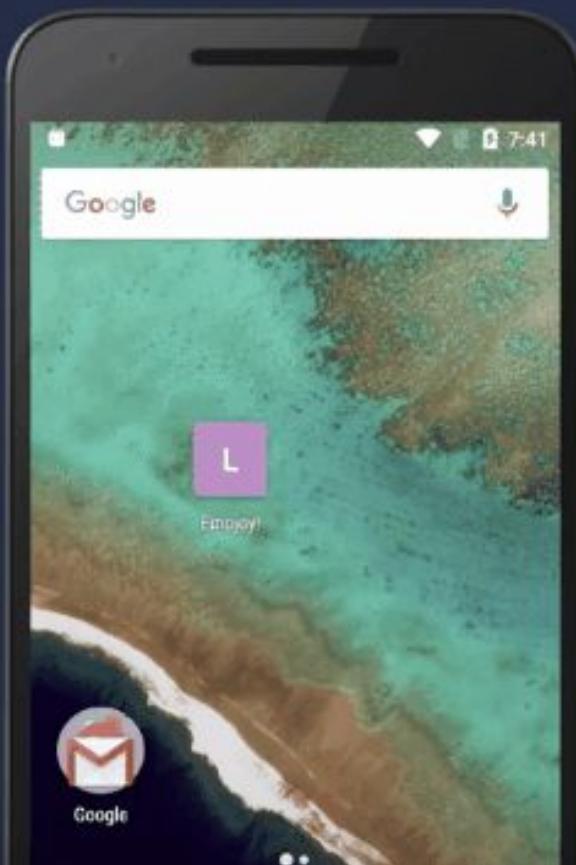
80ms

article page load time in
the Progressive Web App

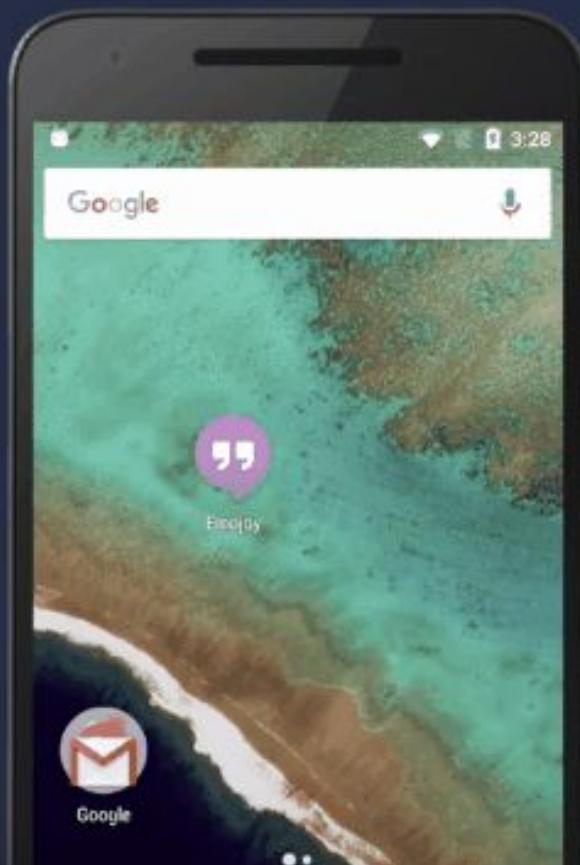
[Poynter article](#)



BEFORE



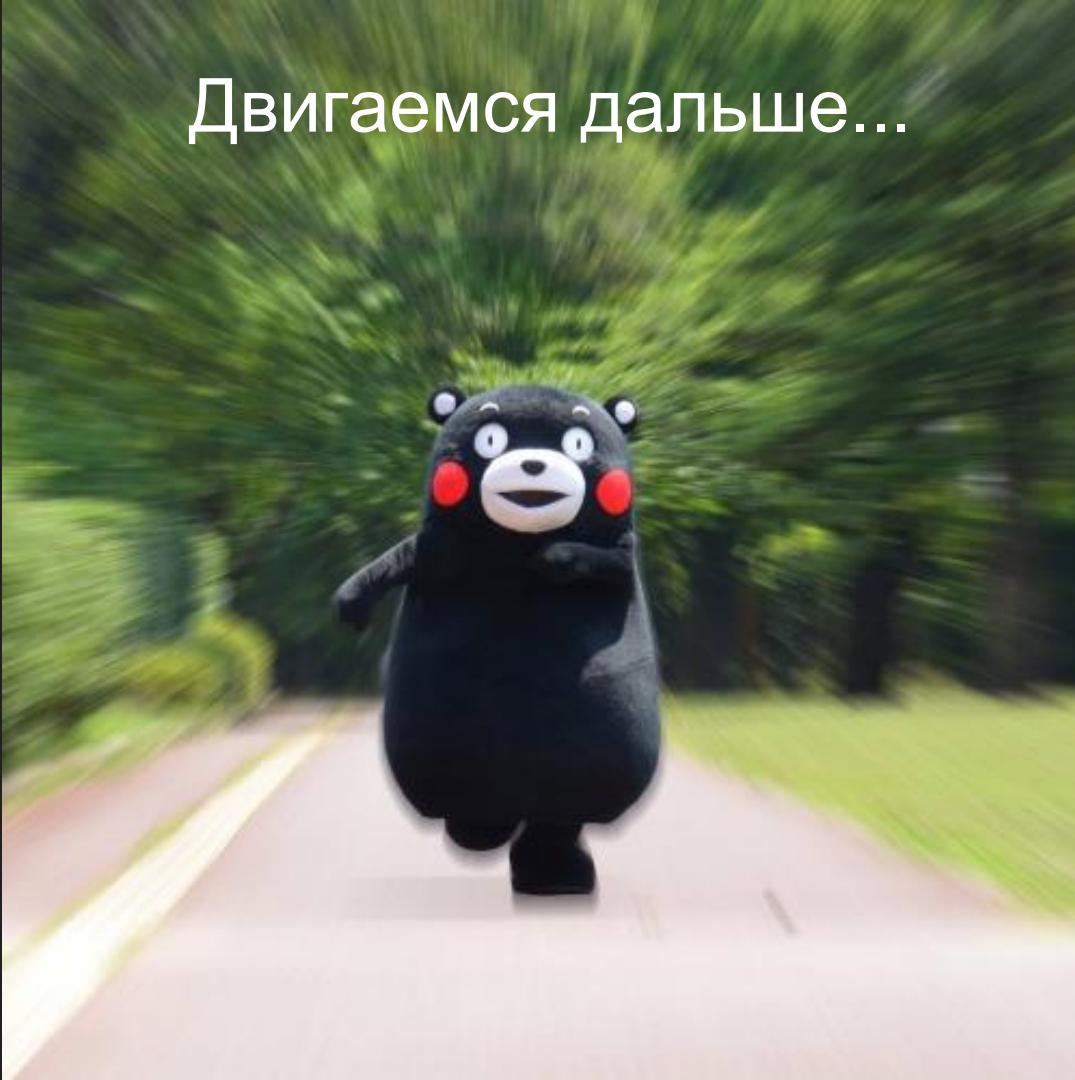
AFTER





Demo Service Workers

Двигаемся дальше...



Распространение - самая
большая проблема ПО

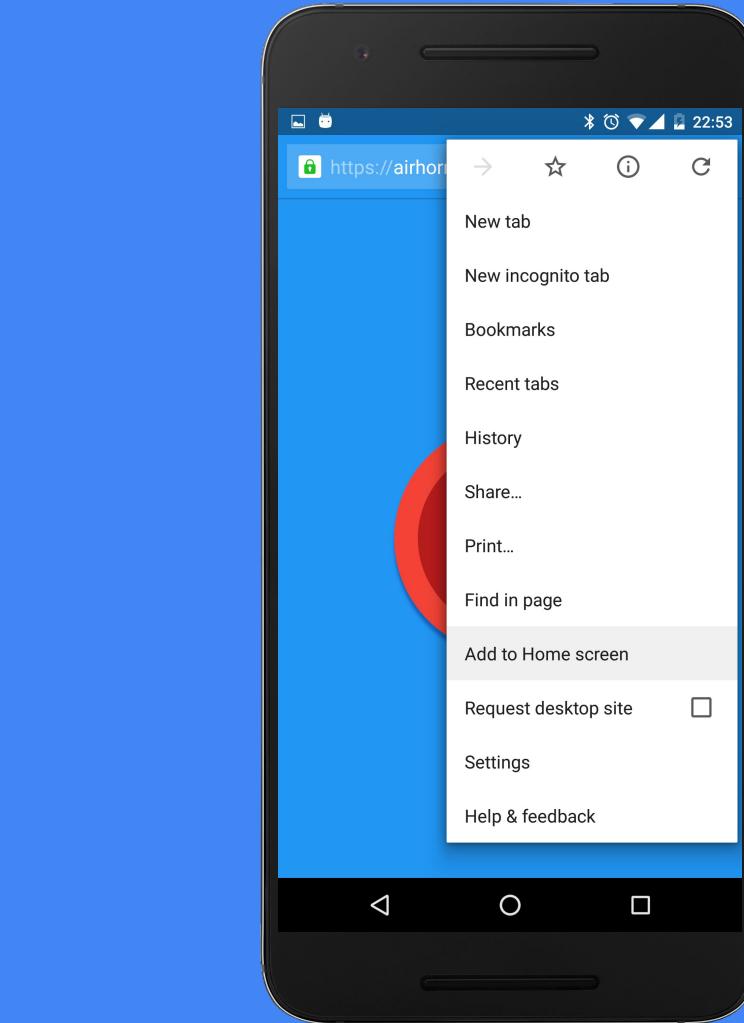
2007: запуск iPhone

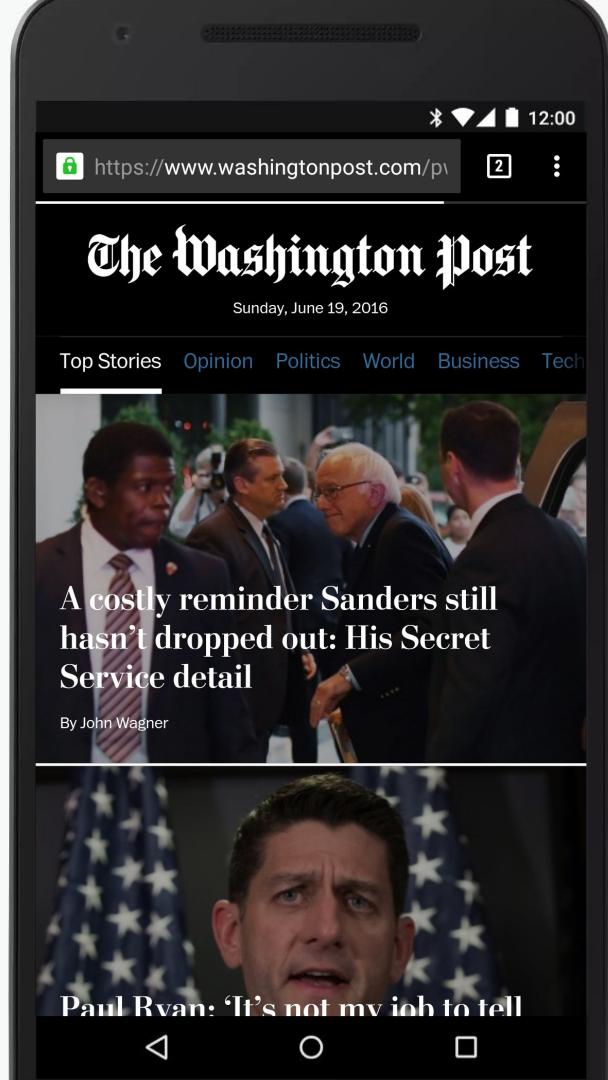
The full Safari engine is inside of iPhone. And so, you can write amazing Web 2.0 and Ajax apps that look exactly and behave exactly like apps on the iPhone. And these apps can integrate perfectly with iPhone services. They can make a call, they can send an email, they can look up a location on Google Maps.

And guess what? There's no SDK that you need! You've got everything you need if you know how to write apps using the most modern web standards to write amazing apps for the iPhone today. So developers, we think we've got a very sweet story for you. You can begin building your iPhone apps today.



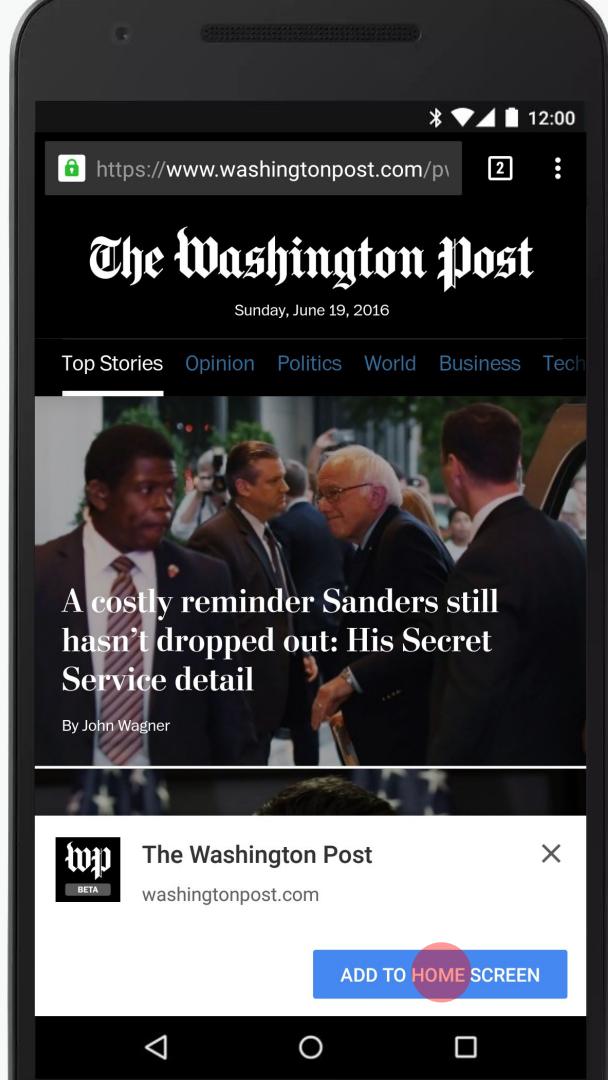
Стандартный Add to Home screen

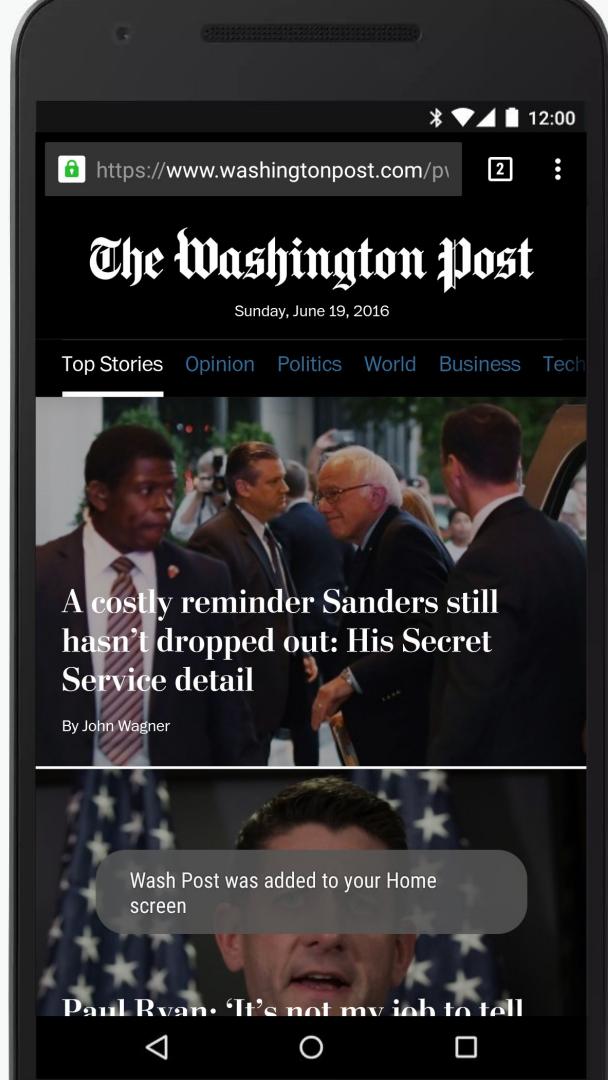


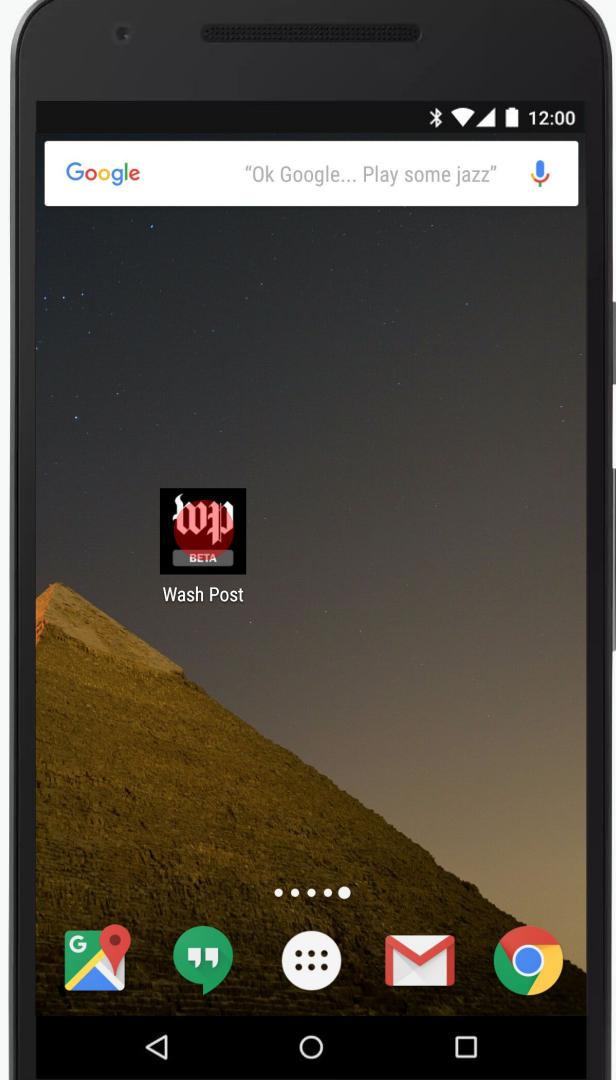


<https://wapo.com/pw>

<https://wapo.com/pwa>







* ▾ ▷ 12:00



BETA

The Washington Post



* ▾ 12:00

The Washington Post

Sunday, June 19, 2016

Top Stories Opinion Politics World Business Tech



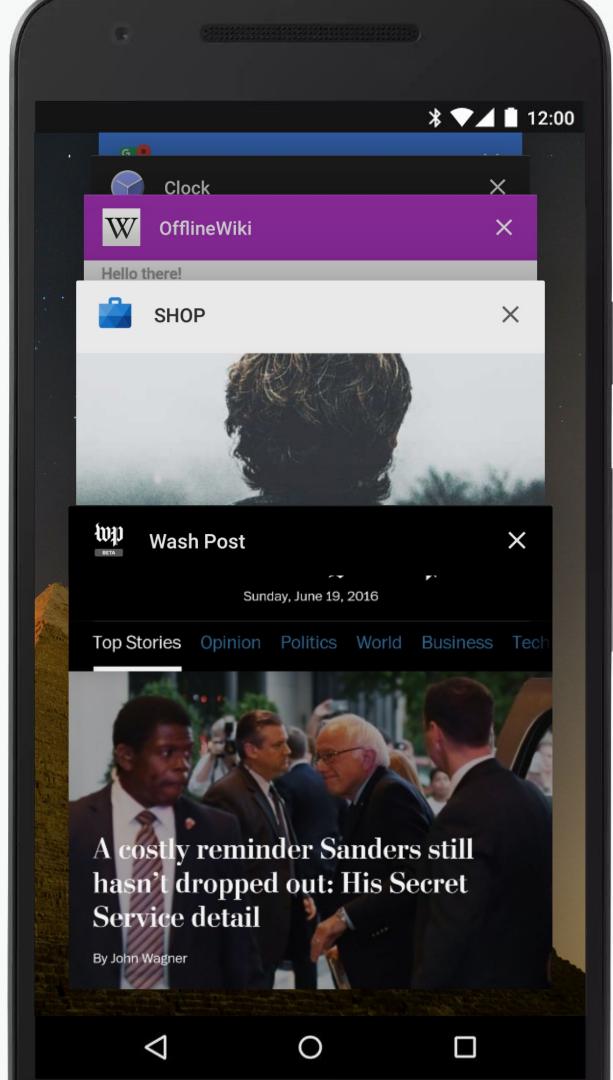
A costly reminder Sanders still hasn't dropped out: His Secret Service detail

By John Wagner



Paul Ryan: 'It's not my job to tell delegates what to do'





Устанавливаемые web приложения за 2 простых шага

1. Создать манифест (json)

```
{  
  "name": "The Airhorner",  
  "short_name": "Airhorner",  
  "icons": [],  
  "start_url": "index.html",  
  "display": "standalone",  
  "theme_color": "",  
  "background_color": ""  
}
```

2. Добавить ссылку на манифест на страницы

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

Find in page

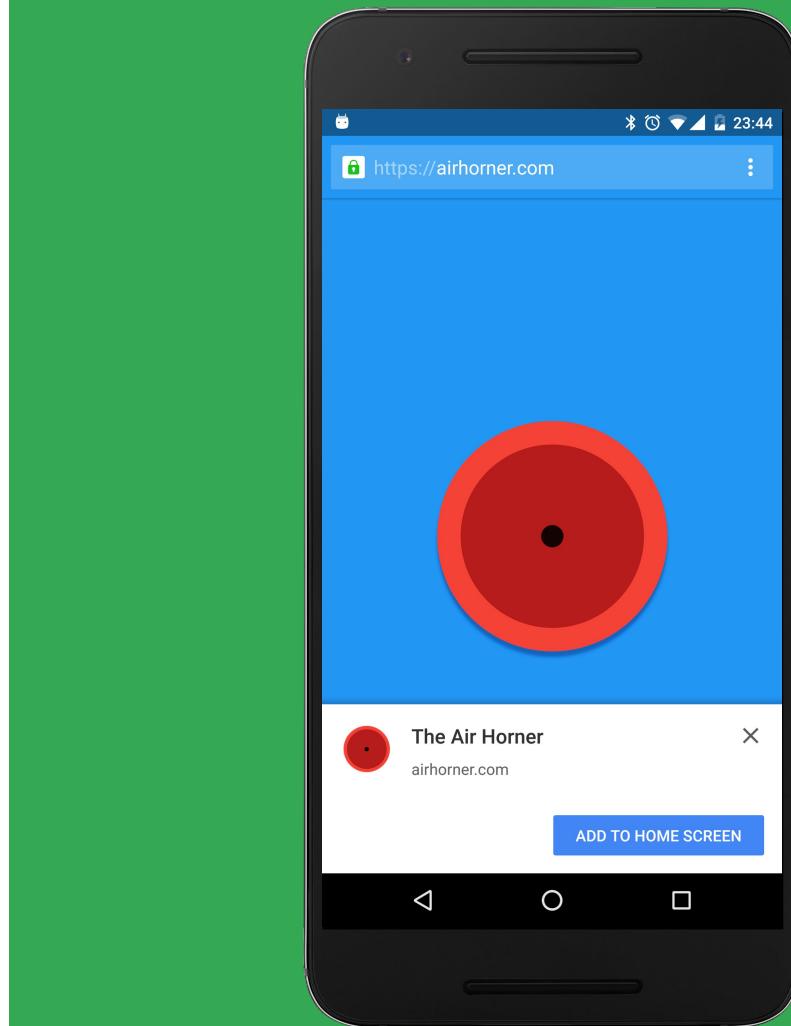
Add to Home screen

Request desktop site

Замечательно, но...

Нативные приложения могут
показывать install banner...

Install banner



Install banner - мощная возможность

Браузер сам показывает
install banner на тех сайтах,
к которым пользователь
возвращается

Работает offline

Нужно кэширование

- Service Worker
- HTTPS

Есть manifest

Определено что и как
запускается

Пользователь
вовлечен

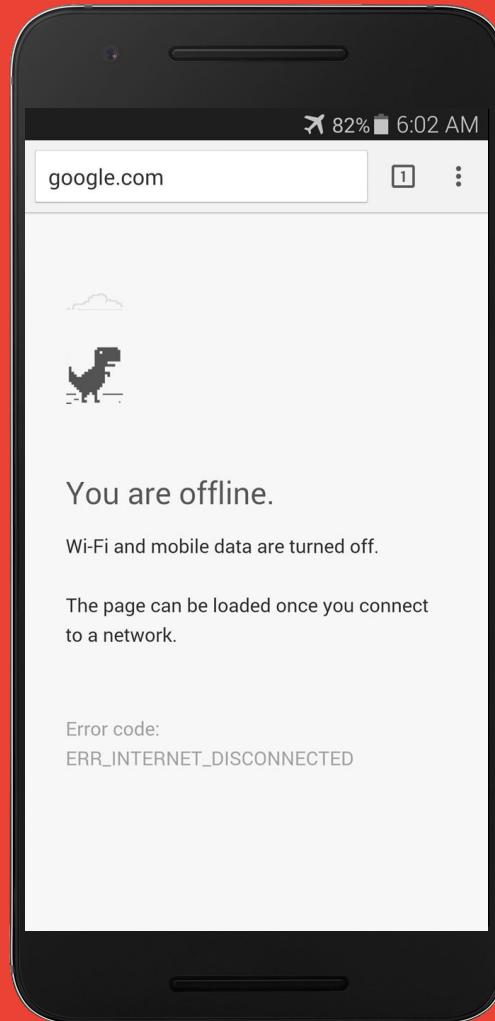
2 "перехода" в течение
по крайней мере 5
минут*

* может измениться

Почему так строго?

Никаких динозавров!

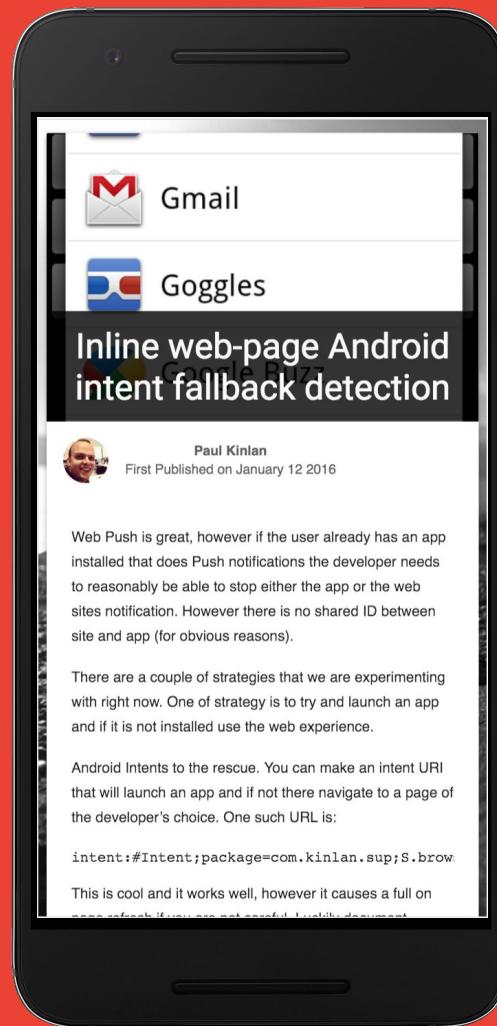
Когда вы на Home screen,
вы всегда должны быть доступны!



Зачем manifest?

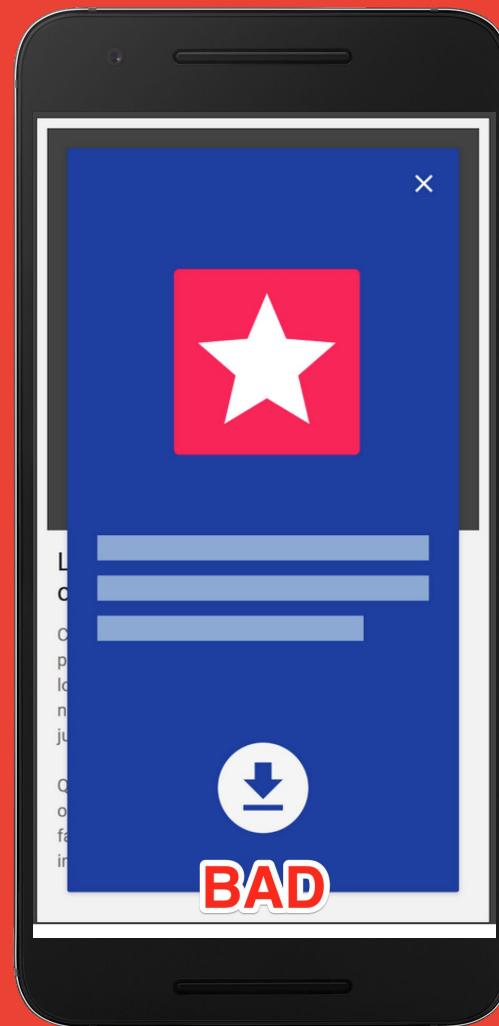
Случайные страницы
не должны запускаться

Вы должны
контролировать что запускается



Зачем вовлечение пользователя?

Не должно быть спама!



Тестирование

Data Saver proxy bypass warnings Android

Use Data Saver with bypass warnings. The proxy must be enabled in settings for this flag to take effect. [#enable-data-reduction-proxy-bypass-warnings](#)
[Enable](#)

Allow invalid certificates for resources loaded from localhost Mac, Windows, Linux, Chrome OS, Android

Allows requests to localhost over HTTPS even when an invalid certificate is presented. [#allow-insecure-localhost](#)

[Enable](#)

Bypass user engagement checks Mac, Windows, Linux, Chrome OS, Android

Bypasses user engagement checks for displaying app banners, such as requiring that users have visited the site before and that the banner hasn't been shown recently. This allows developers to test that other eligibility requirements for showing app banners, such as having a manifest, are met.

[#bypass-app-banner-engagement-checks](#)

[Disable](#)

Use Chrome Sync sandbox Mac, Windows, Linux, Chrome OS, Android

Connects to the testing server for Chrome Sync. [#use-sync-sandbox](#)

[Enable](#)

Child account detection Mac, Windows, Linux, Chrome OS, Android

Enable detection of child accounts on sign-in and start-up, as well as periodically. [#enable-child-account-detection](#)

Default ▾

Child account SafeSites filtering Mac, Windows, Linux, Chrome OS, Android

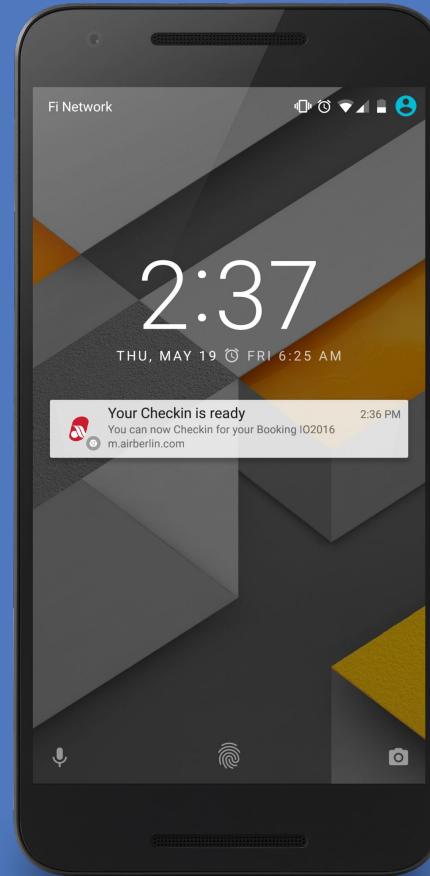
Enable or disable SafeSites filtering for child accounts. [#supervised-user-safesites](#)

Default ▾



Demo Web App Manifest

Web Push Notifications



Добавление Project ID в Manifest.json

```
{ "short_name": "Air Horner",
  "name": "Air Horner",
  "start_url": "/",
  "display": "standalone",
  "icons": [
    {
      "src": "icons/icon-192.png",
      "sizes": "192x192",
      "type": "image/png"
    }
  ],
  "gcm_sender_id": "123456789012345"
}
```

Добавление Project ID в Manifest.json

```
{ "short_name": "Air Horner",
  "name": "Air Horner",
  "start_url": "/",
  "display": "standalone",
  "icons": [
    {
      "src": "icons/icon-192.png",
      "sizes": "192x192",
      "type": "image/png"
    }
  ],
  "gcm_sender_id": "123456789012345"
}
```

Запрос разрешения и подписка

```
function subscribe() {  
    navigator.serviceWorker.getRegistration().then(function(reg) {  
        reg.pushManager.subscribe({userVisibleOnly: true})  
            .then(function(sub) {  
                console.log('Update Server with End Point', sub);  
            })  
            .catch(function(error) {  
                console.log('Unable to subscribe user', error);  
            });  
    });  
}
```

Запрос разрешения и подписка

```
function subscribe() {  
    navigator.serviceWorker.getRegistration().then(function(reg) {  
        reg.pushManager.subscribe({userVisibleOnly: true})  
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                console.log('Unable to subscribe user', error);  
            });  
    });  
}
```

Запрос разрешения и подписка

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            console.log('Update Server with End Point', sub);  
        }).catch(function(error) {  
            console.log('Unable to subscribe user', error);  
        });  
    });  
}
```

Отправка через Firebase

POST /gcm/send HTTP/1.1

HOST: android.googleapis.com

Authorization: key=XXXXXXXXXXXXXXXXXXXXXX

Content-Type: application/json

Content-Length: ##

```
{"registration_ids":  
  ["fs...Tw:APA...SzXha",  
   "ws...bW:ABE...JzEu0"]}  
}
```

Sending via Firebase

POST /gcm/send HTTP/1.1

HOST: android.googleapis.com

Authorization: key=XXXXXXXXXXXXXXXXXXXXXX }

API Key

Content-Type: application/json

Content-Length: ##

{"registration_ids":

["fs...Tw:APA...SzXha",
 "ws...bW:ABE...JzEu0"]

}

Sending via Firebase

POST /gcm/send HTTP/1.1

HOST: android.googleapis.com

Authorization: key=XXXXXXXXXXXXXXXXXXXXXX

Content-Type: application/json

Content-Length: ##

```
{"registration_ids":  
  ["fs...Tw:APA...SzXha",  
   "ws...bW:ABE...JzEu0"],  
 }
```

} Subscription IDs от
пользователей

Отправка через Web Push API (Firefox)

PUT /push/gAAAAABW108...lguKqqSFFSlU= **HTTP/1.1**

HOST: updates.push.services.mozilla.com

TTL: 2419200

Отправка через Web Push API (Firefox)

PUT /push/gAAAAABW108...lguKqqSFFSIU= HTTP/1.1 } URL содержит subscriber ID
HOST: updates.push.services.mozilla.com
TTL: 2419200

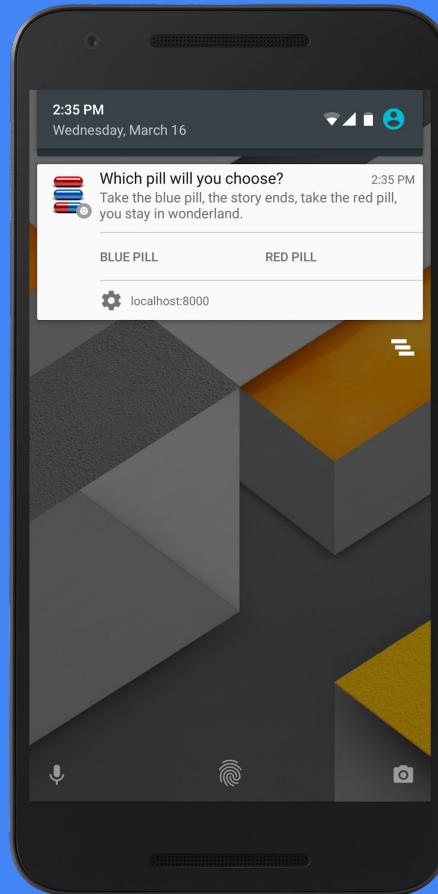
Обработка оповещений

```
self.addEventListener('push', function(event) {  
    event.waitUntil(  
        self.registration.showNotification('Title', {  
            body: 'I\'m the message body',  
            icon: 'images/icons.png',  
            tag: 'tag',  
        }));  
});
```

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Обработка действий пользователя



Добавление кнопок

```
self.registration.showNotification(data.title, {  
  body: data.body,  
  icon: data.icons,  
  tag: data.tag,  
  actions: [  
    {action: 'find-shelters', title: 'Find local shelters'},  
    {action: 'oz', title: 'Look for Dorothy'}  
  ]  
});
```

Добавление кнопок

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  ]  
});
```

Обработка нажатий

```
self.addEventListener('notificationclick', function(event) {  
    var url;  
    event.notification.close();  
    if (event.action === 'find-shelters') {  
        url = 'https://www.google.com/search?q=emergency%20shelters';  
    } else if (event.action === 'oz') {  
        url = 'https://www.youtube.com/watch?v=PSZxmZmBfnU';  
    } else {  
        url = event.srcElement.location.origin;  
    }  
  
    event.notification.close();  
    return clients.openWindow(url);  
});
```

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Demo Push Notifications



Спасибо за внимание!

Сергей Пугачёв, Google
@spugachev

<https://github.com/spugachev/DevFest-Kazan-2016>