Google

Best Mobile User Experience

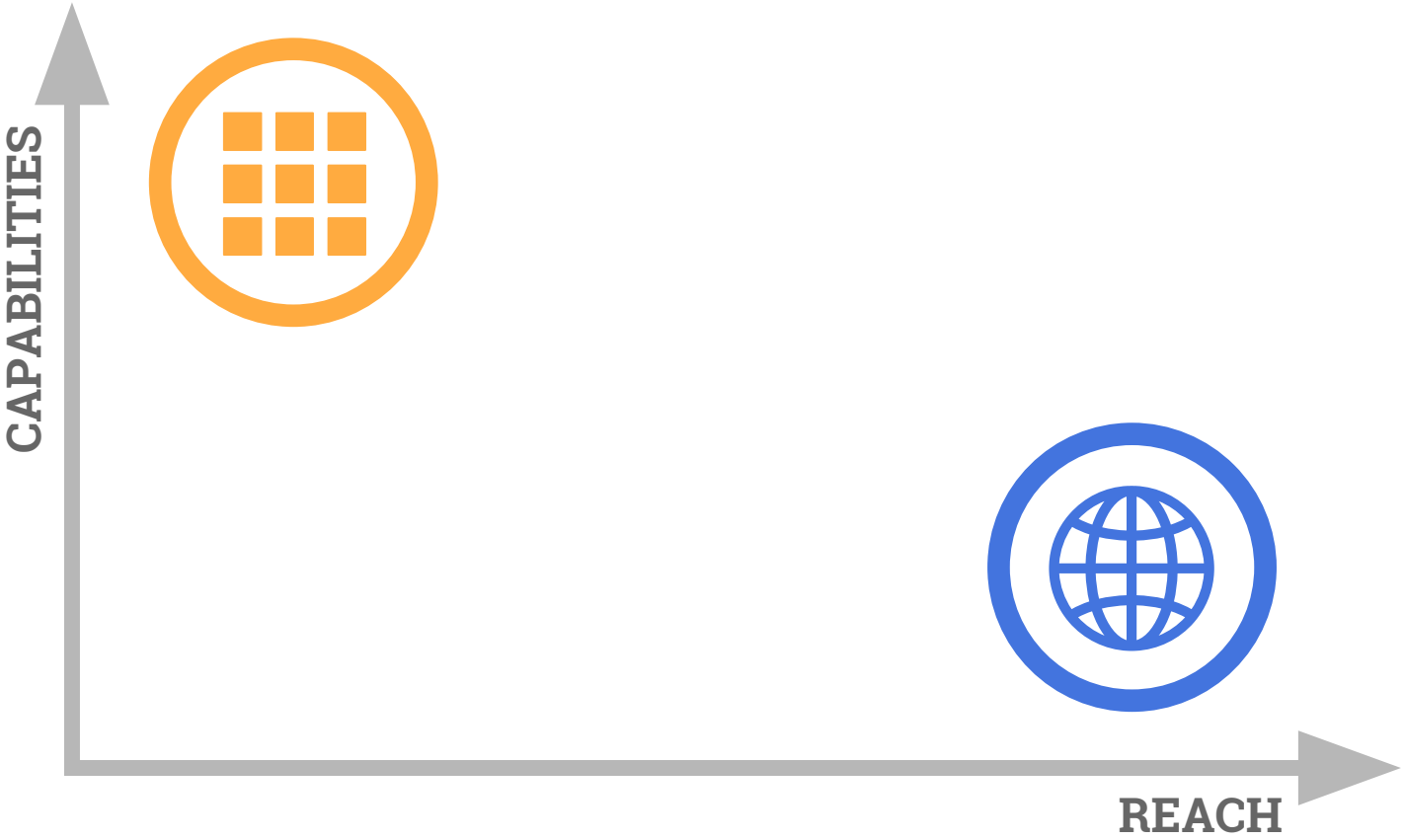
Leverage New Web Standards to improve your mobile performance

+Malte Ubl
@cramforce
+Martin Loss

Mobile changed consumer behaviors.

Google

September 2010

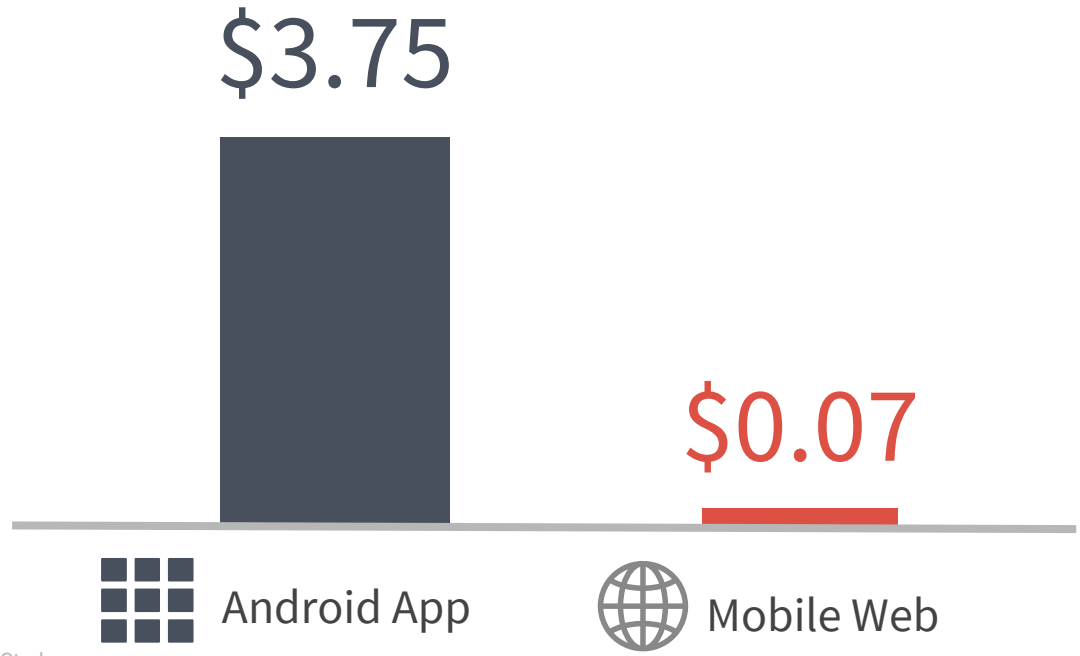

CAPABILITIES
REACH

100+

different URLs per month

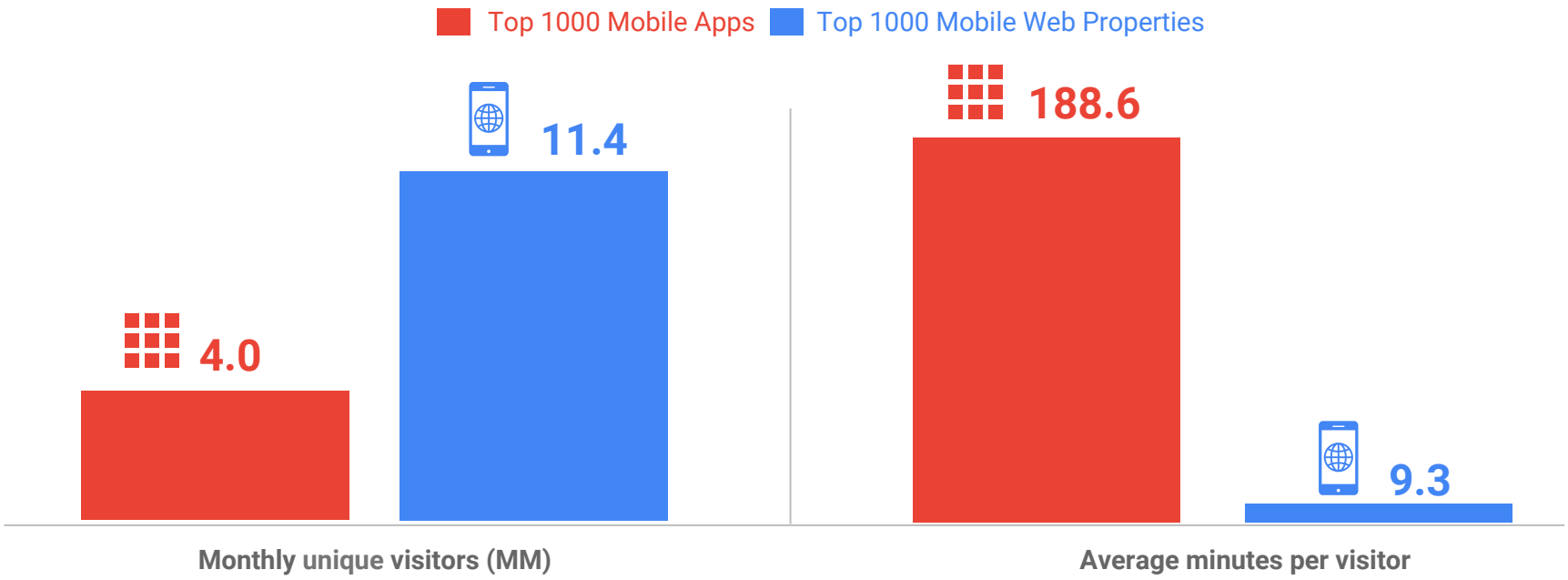
Google Source: Google Chrome internal

User acquisitions costs are low - Housing.com



Google Source: Housing.com Case Study

The web offers great discovery, but engagement is low



Google Source: comScore Mobile Metrix, U.S., Age 18+, June 2016

Challenges of the mobile web

1. **Pages and sites take too long to load**
2. **Limited access to device capabilities** (offline, push notifications, add to homescreen)
3. **Completing simple actions takes too long** (forms, sign in)

Google's Ambitious Project to Remake the Mobile Web MAY 19, 2016

Janet Yellen Says Get Ready for a Rate Hike 1:59 PM EDT

Verizon Settles Strike With Tentative Four Year Agreement 1:56 PM EDT

Why 'Hot' Tech Skills Alone Won't Get You Hired 1:49 PM EDT

This Startup Pays For Employee Weddings 1:31 PM EDT

Ford's Plug-In Hybrid Hits a New Record 1:04 PM EDT

Americans Are Getting Worse At Their Jobs 12:58 PM EDT

Verizon Strike Is Hitting U.S. Payroll Numbers In A Big Way 12:49 PM EDT

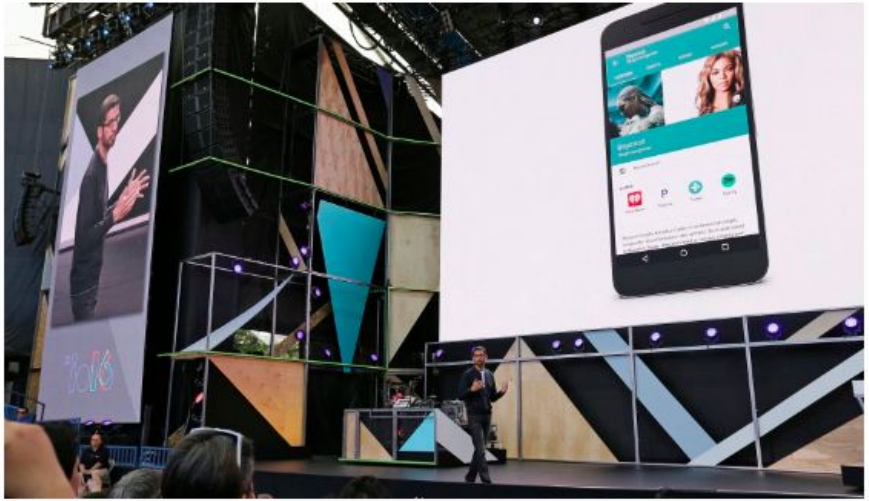
Uber and Lyft Are Threatening to Leave This Major City 12:45 PM EDT

How Disney Aims to Dominate This

THE 21ST CENTURY CORPORATION GOOGLE See the Fortune 500 list

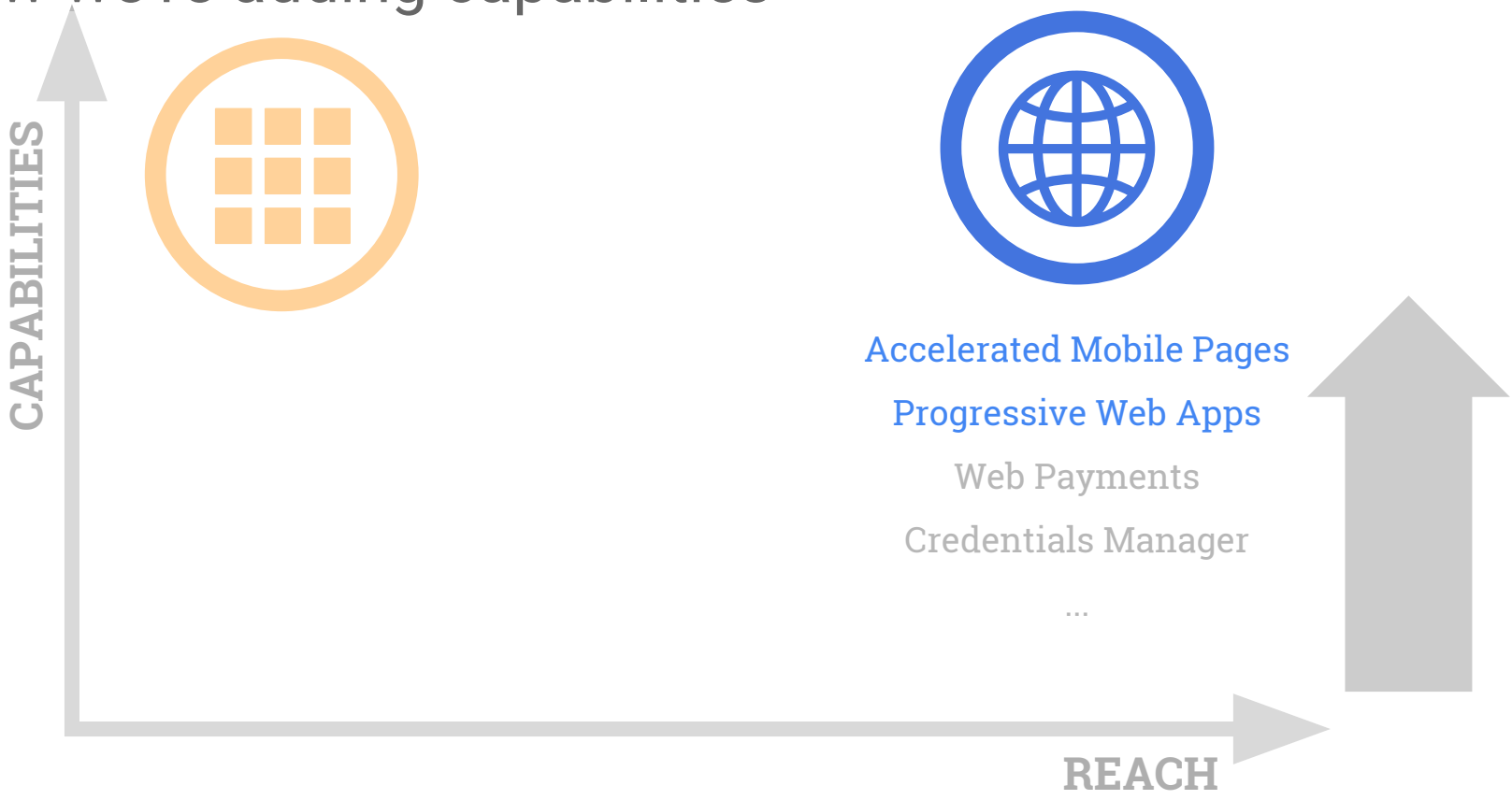
Google's Ambitious Project to Remake the Mobile Web

by Jonathan Vanian @JonathanVanian MAY 19, 2016, 5:45 PM EDT



Google

So now we're adding capabilities



What open web technology can help me?

Accelerated Mobile Pages

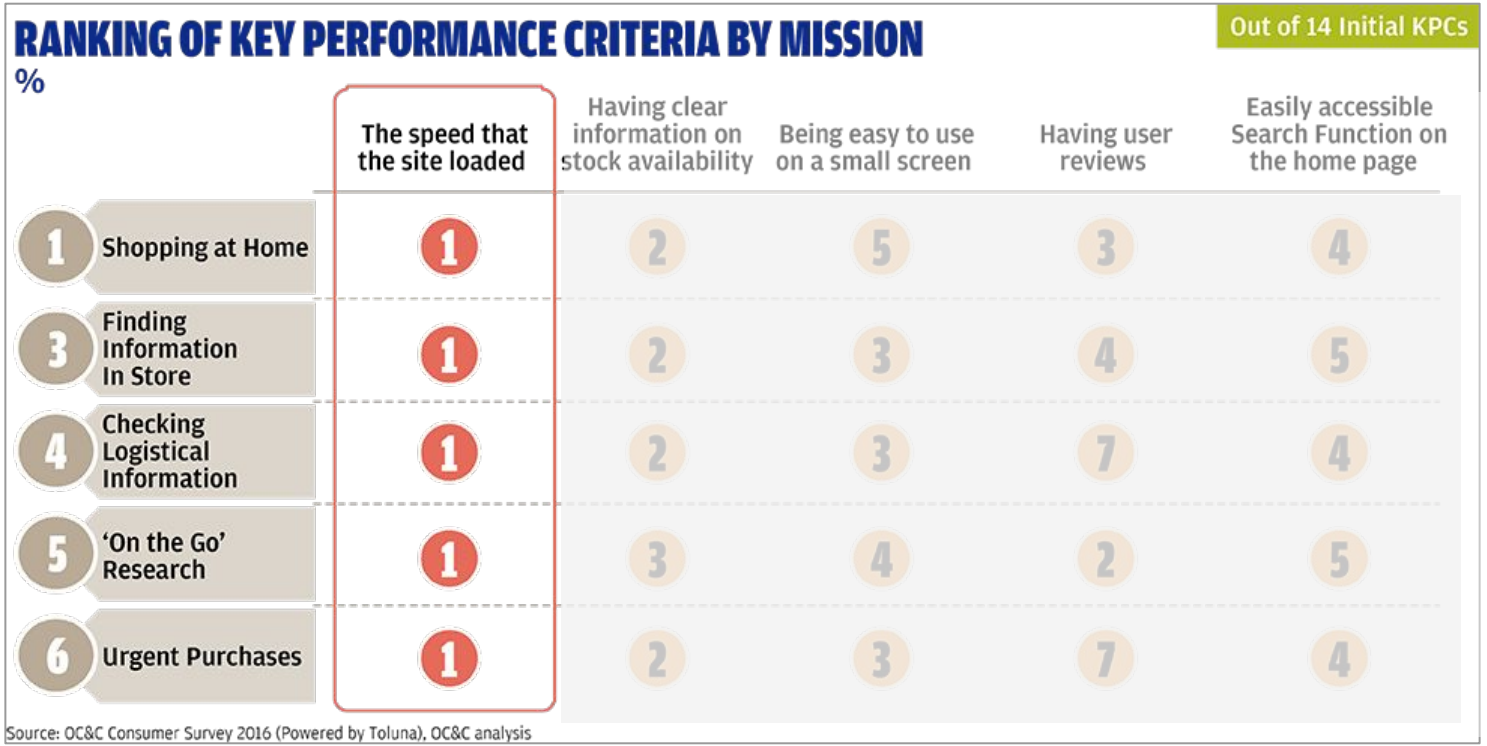
Progressive Web Apps

Web Payments

Seamless Sign In

Why speed matters

Users today demand fast websites



Source: OCC Strategy

Users today demand fast websites

53%

of mobile site visitors leave after **3 seconds** of load time

Google

Source: DoubleClick

Users today reward fast websites

2X

more mobile ad revenue for sites that load in **5 seconds** vs. 19 seconds

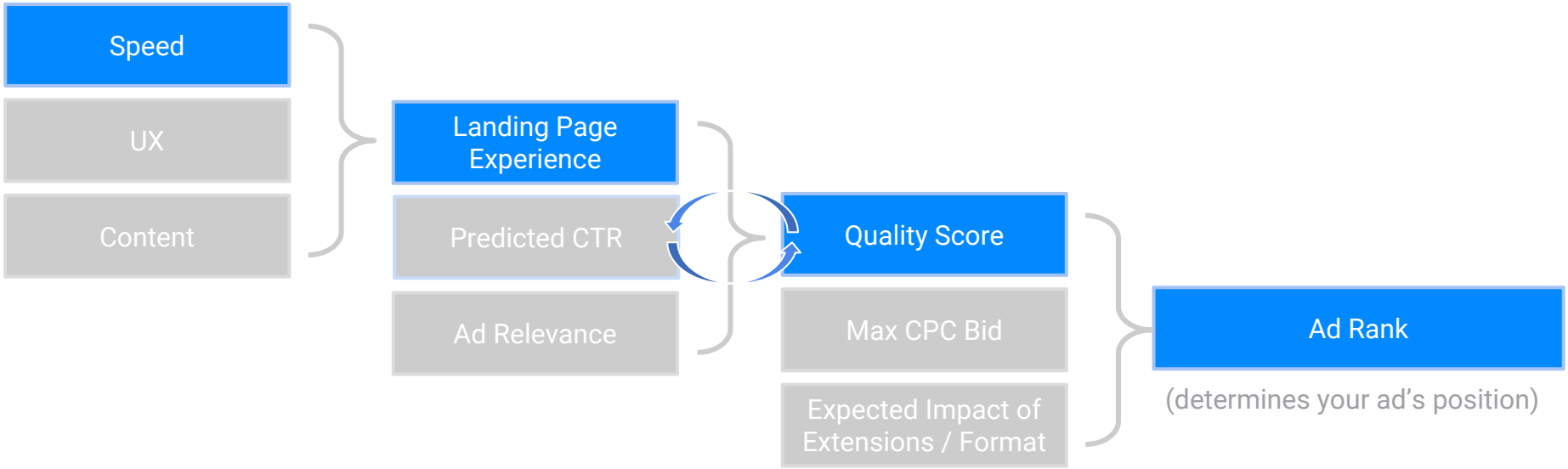
+27%

increase in conversion rate when improving page load times

Google

Source: left - Google data, right SOASTA

Speed is a forgotten lever for improving your ad rank



Google

Source: AdWords Help

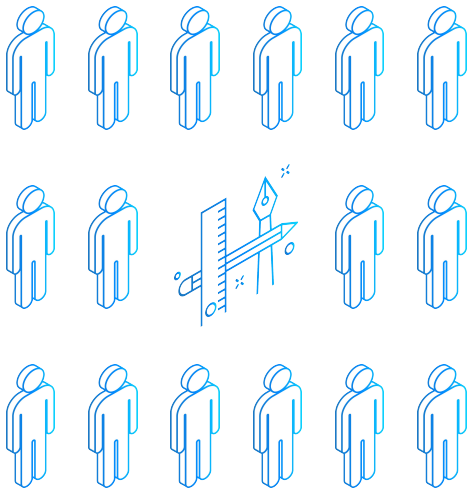
Mobile Sites often don’t meet that demand

3 out of 4

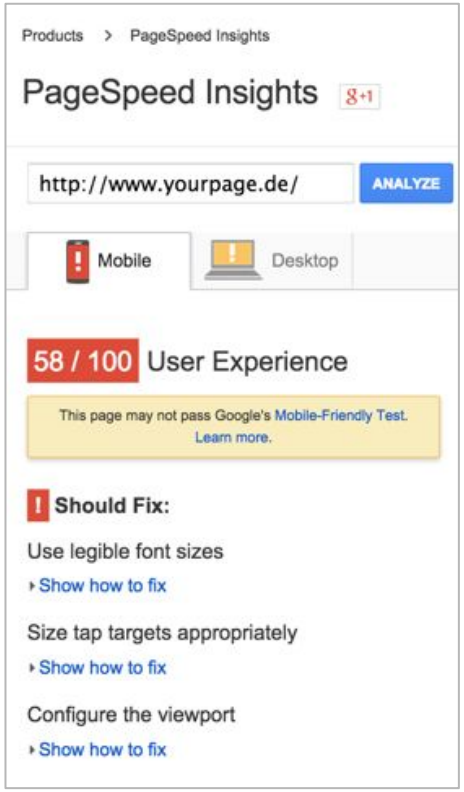
Mobile websites take more than 10 seconds to load

Google

Source: DoubleClick



Maintaining a fast mobile website on your own can often require large development teams or specialized skill sets

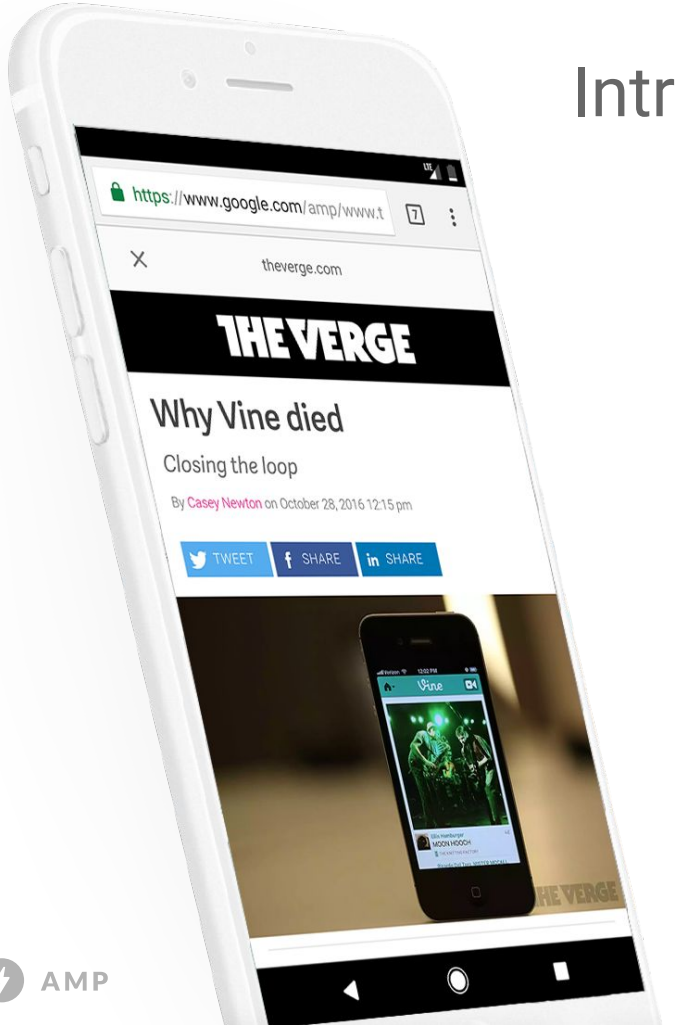


1. Avoid landing page redirects
2. Enable compression
3. Leverage browser caching
4. Minify CSS
5. Minify HTML
6. Optimize images
7. Prioritize visible content
8. Reduce server response time
9. Minify JavaScript
10. Eliminate render-blocking JavaScript and CSS in above the fold content

What open web technology can help me?

AMP

AMP
WORLD
Mysterious light pillars light up Canada's night sky
At 1:30 in the morning, while most of Ontario, Canada was asleep, Timothy Joseph Elzinga was tending to his crying toddler. Then he looked out the bathroom window.
"I saw beams of light, looking like something out of Star Trek or Close Encounters of the Third Kind," Elzinga told Mashable on Thursday, nearly a week after he witnessed the so-called light pillars.
SEE ALSO: Frozen Michigan lighthouse is
NEXT RECIPE: LINGUINE AND ...
Linguine with Shrimp Scampi
721 Reviews
Recipe courtesty of Ina Garten
TECH
11 technologies to watch in 2017
SEE ALSO: What you should expect from the iPhone in 2017
AMP



Introducing the AMP Project

An open source initiative to enable a better web, with sites that are fast, beautiful, and monetize well

AMP

What AMP provides for publishers, merchants, advertisers...

Build compelling user experiences...

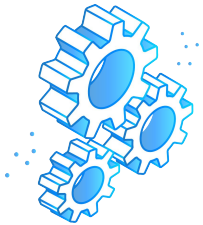
- Near instantaneous loading
- Smooth scrolling and engagement
- Styling and branding flexibility

...with opportunities for distribution

Bing Google

AMP is built on 3 core components

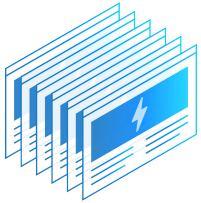
AMP HTML



AMP JS

AMP Cache

AMP format usage continues to grow



1.4B+

total AMP pages

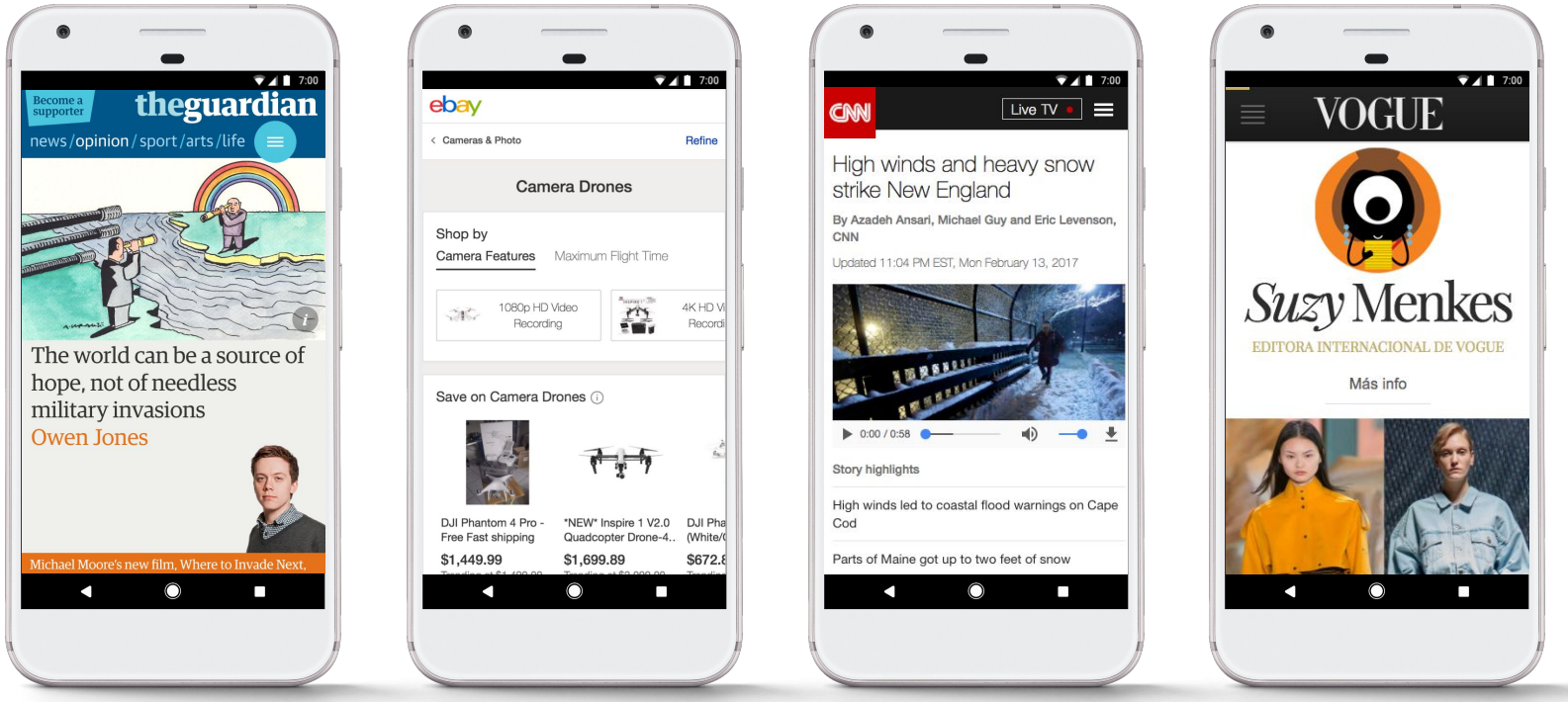
850K+

domains are producing AMP pages

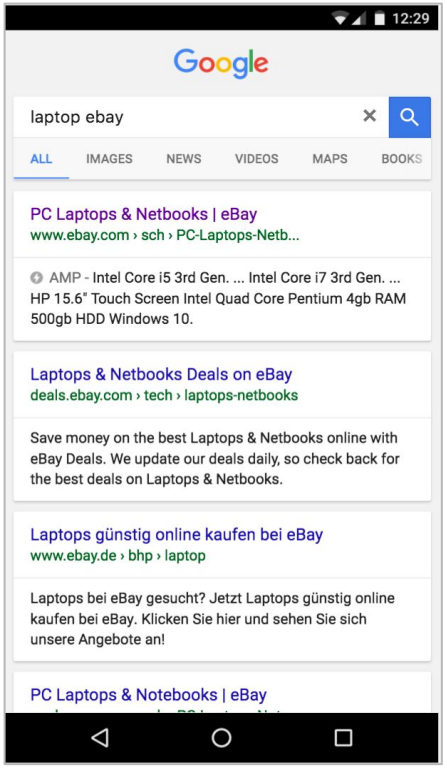
26M+

AMP pages produced per week

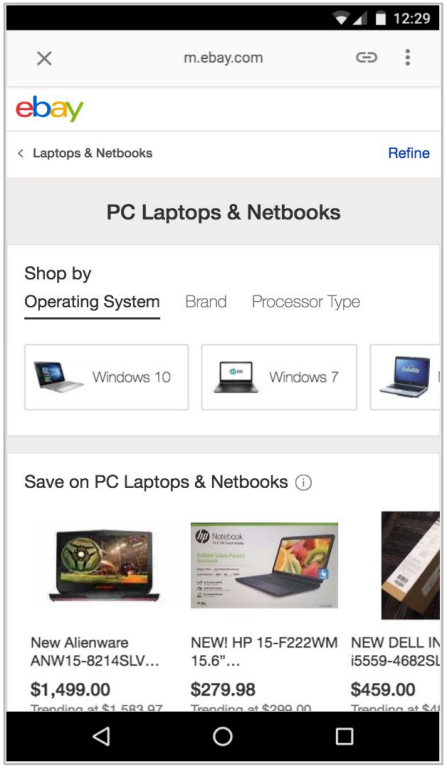
AMP pages support design customization and flexibility



AMP is not ‘publishers only’ and works across the funnel



Search



Category

Product details

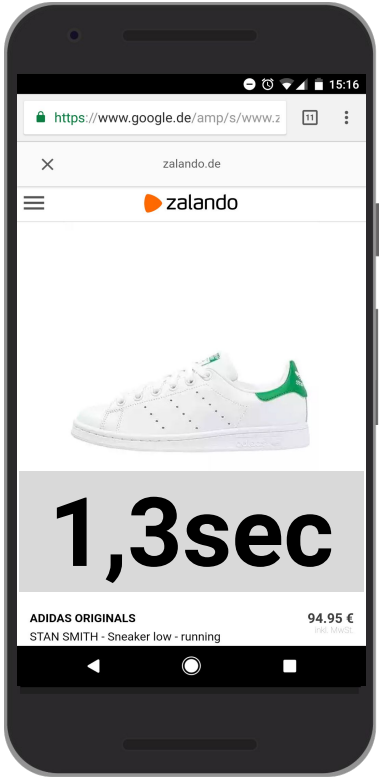
AMP

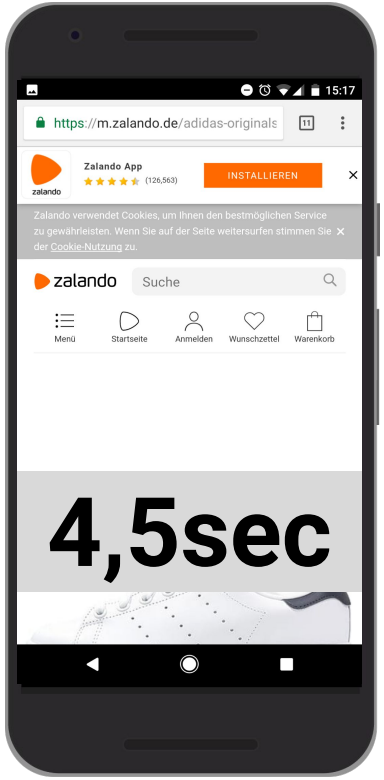
Zalando is already testing AMP for product details pages

Julia Stern,
VP Performance Marketing

zalando

“We believe in speed and think that AMP is able to increase the conversion rate and improve the customer experience”





AMP

Test Set-Up: Visually Complete using Chrome Developer Tools under Good 3G

Publishers and websites are seeing great results with AMP

RETENTION

3x more

time spent on AMP pages

AUDIENCE GROWTH

80%

of AMP traffic is new

ENGAGEMENT

13% increase

in time spent on site

RETENTION

+23%

return 7DA users

AUDIENCE GROWTH

67% increase

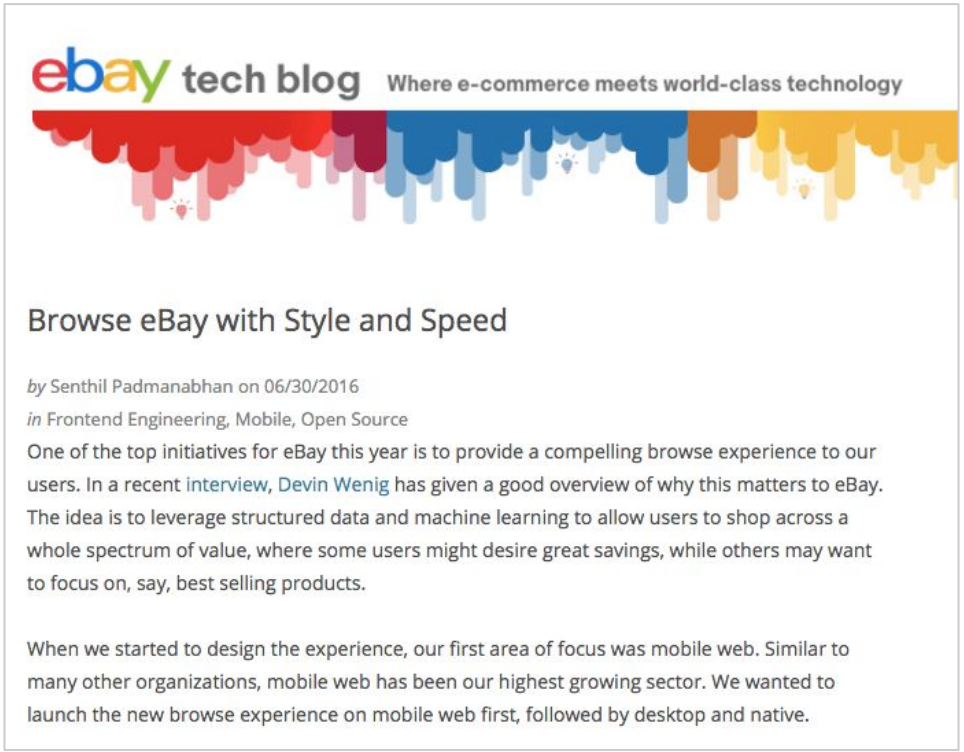
in new visitors

MONETIZATION

200% increase

in average CTR on AMP pages

Ecommerce websites are seeing great results with AMP



ebay tech blog — Where e-commerce meets world-class technology

Browse eBay with Style and Speed

by Senthil Padmanabhan on 06/30/2016

in Frontend Engineering, Mobile, Open Source

One of the top initiatives for eBay this year is to provide a compelling browse experience to our users. In a recent interview, Devin Wenig has given a good overview of why this matters to eBay. The idea is to leverage structured data and machine learning to allow users to shop across a whole spectrum of value, where some users might desire great savings, while others may want to focus on, say, best selling products.

When we started to design the experience, our first area of focus was mobile web. Similar to many other organizations, mobile web has been our highest growing sector. We wanted to launch the new browse experience on mobile web first, followed by desktop and native.

AMP in Namshi

We're one of the top e-commerce website in MENA region. Similar to Ebay, we have seen the potential of AMP pages in e-commerce websites. AMP pages can play a vital role in the organic search results. No one would love to open a slow website even if it's the first one in Google search results. Sooner, people will look for the AMP tag in Google results, than clicking on the first one.

As said, giving an ultrafast loading experience to the users was our main goal. We knew that AMP would be the right choice for this (considering the traffic from organic search results). At this time, AMP had all the ingredients for our requirements, and more importantly, we didn't have to make many changes to the existing website.

Source: Ebaytechblog & Namshi Techblog

Many analytics and adtech providers have embraced AMP

90+
ad servers and networks support AMP HTML

25+
analytics and viewability vendors are compatible

15+
capable embed formats across social, video, etc.

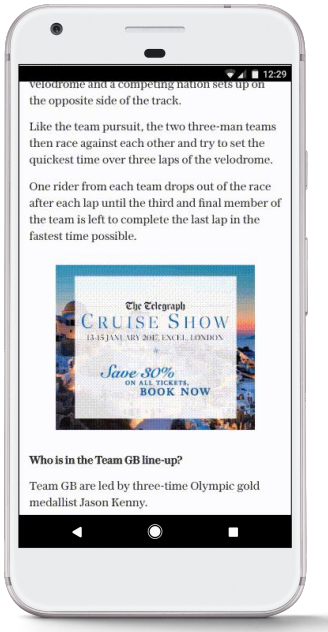
Monetizing your AMP pages

- Choose ad experiences with flexible formats
- Replicate models with 100+ adtech integrations
- Limit access for non-subscribers
- Track engagement and ROI

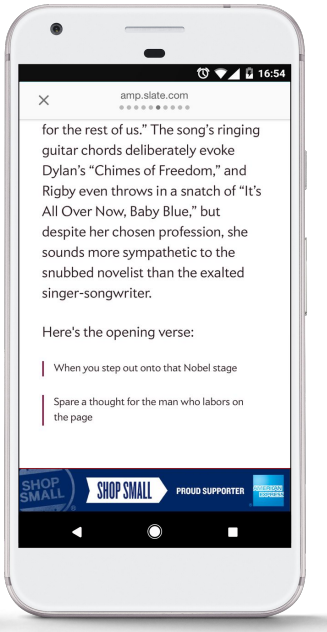
AMP

AMP supports a broad range of ads

Banner ads

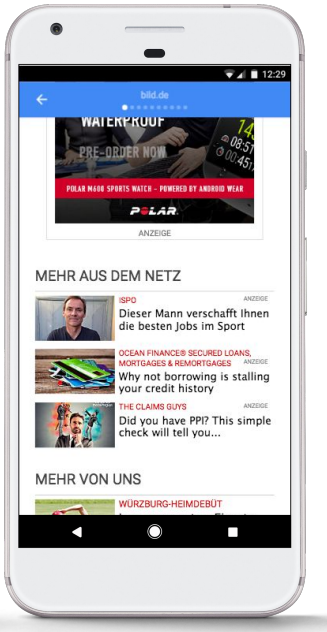


Sticky ads

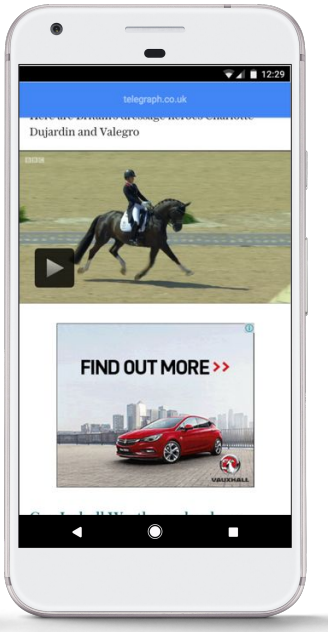


Flying carpet

Promoted content



Video ads



Getting started with AMP is easy

If you have a popular CMS, use their support

Drupal™ Hatena marfeel SQUARESPACE WordPress

Full documentation on
ampproject.org

Image by Nascarking licensed as CC-BY-SA-4.0 https://goo.gl/jx30OB

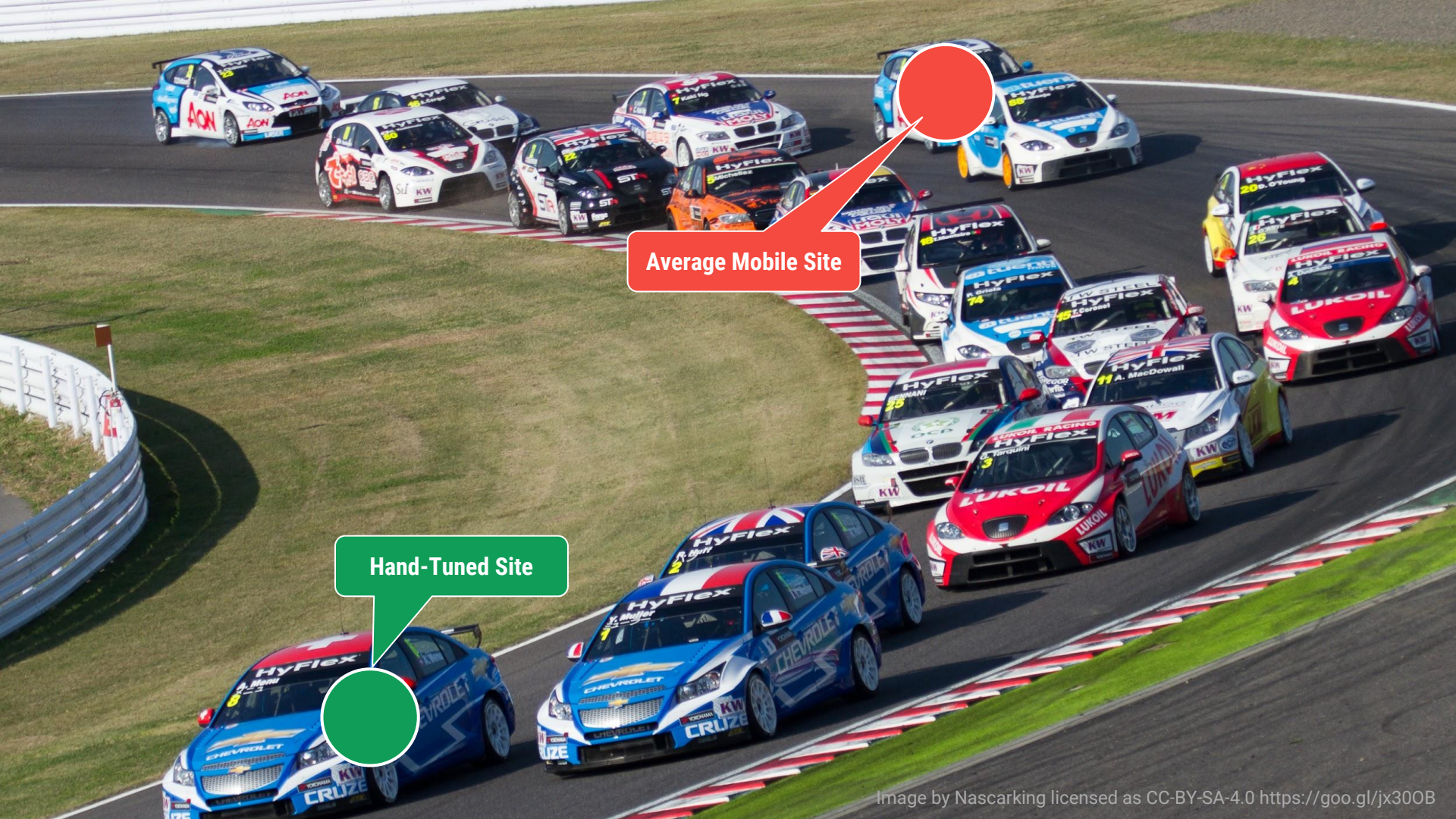
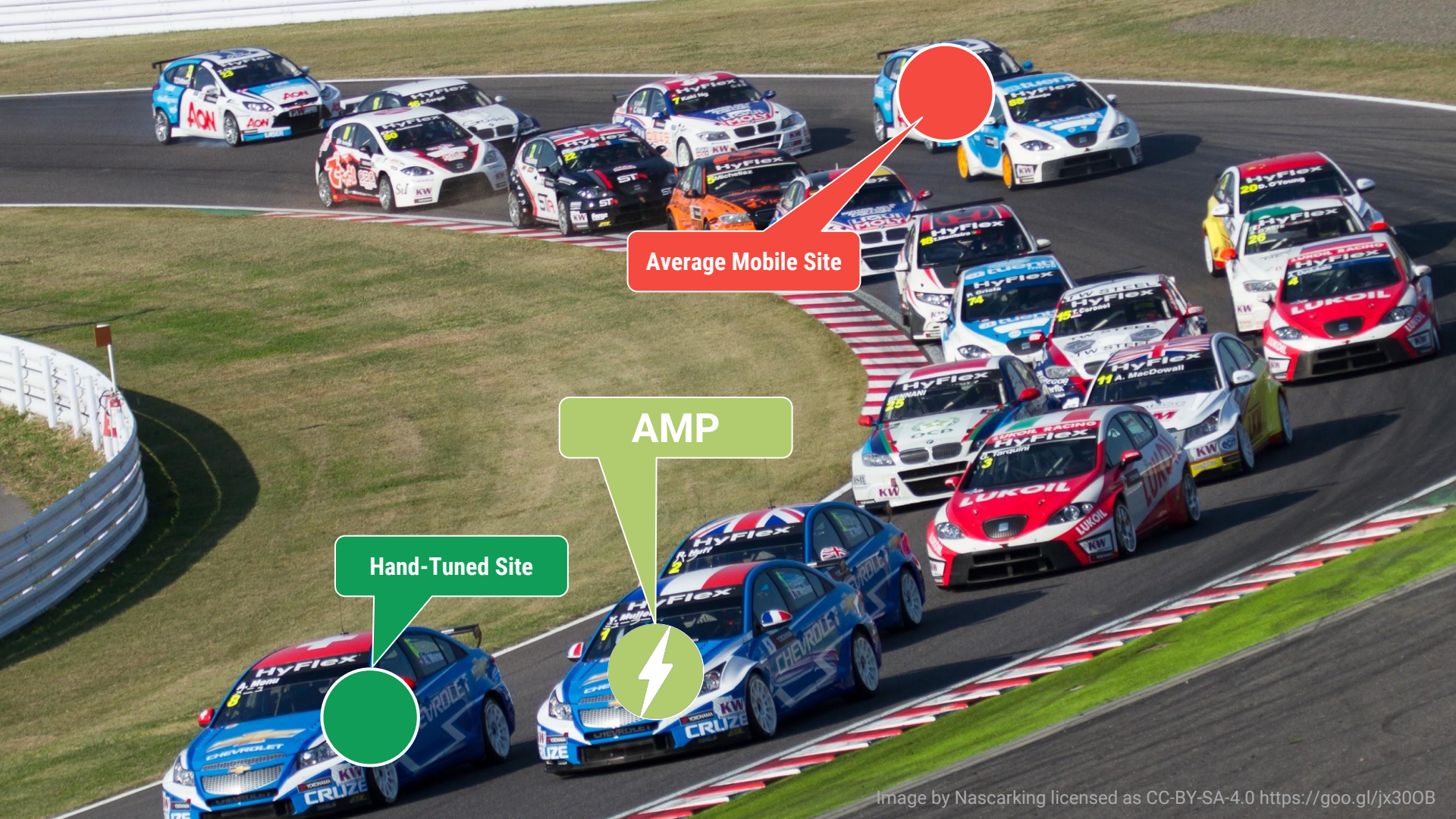


Image by Nascarking licensed as CC-BY-SA-4.0 https://goo.gl/jx30OB



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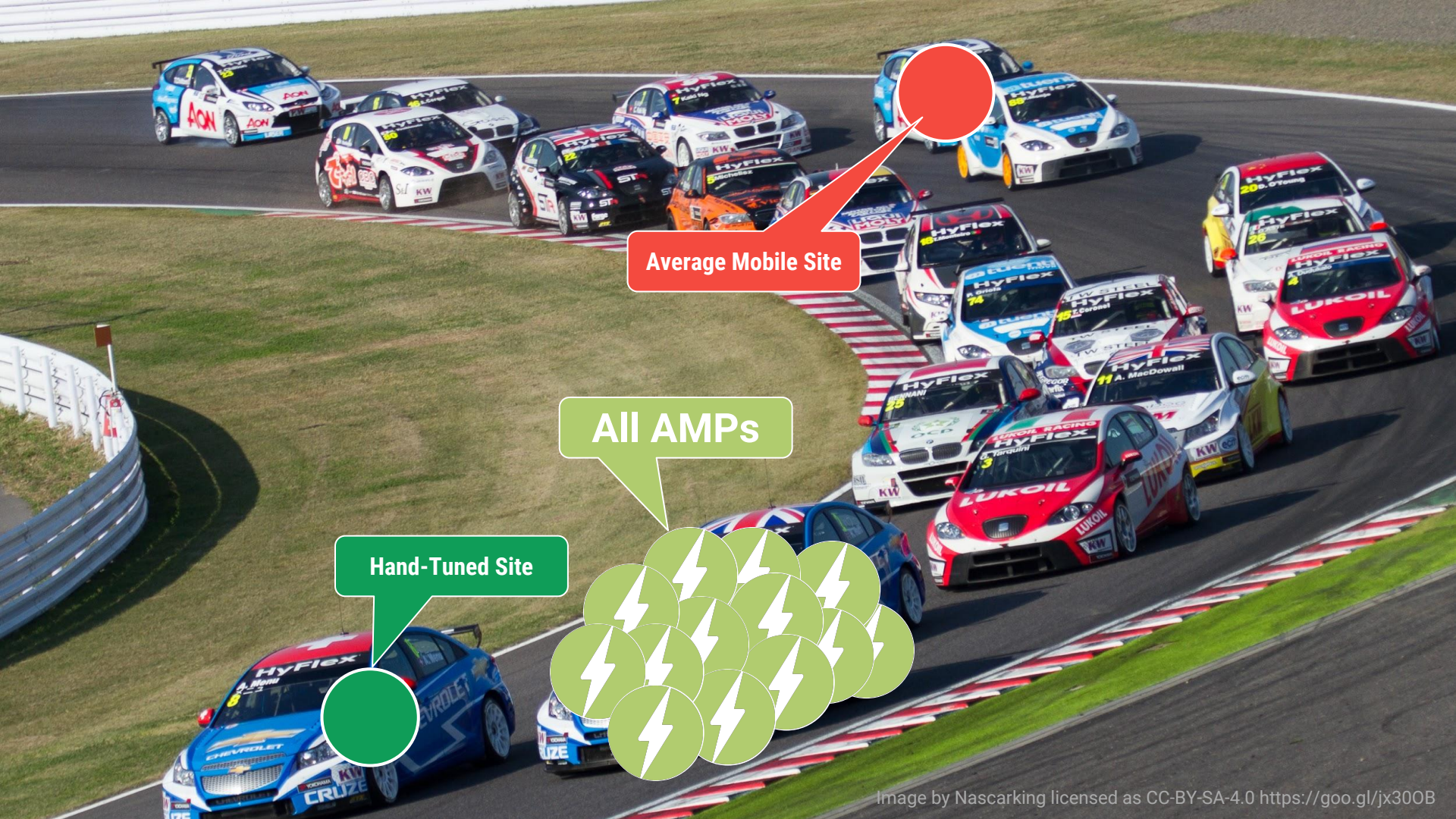
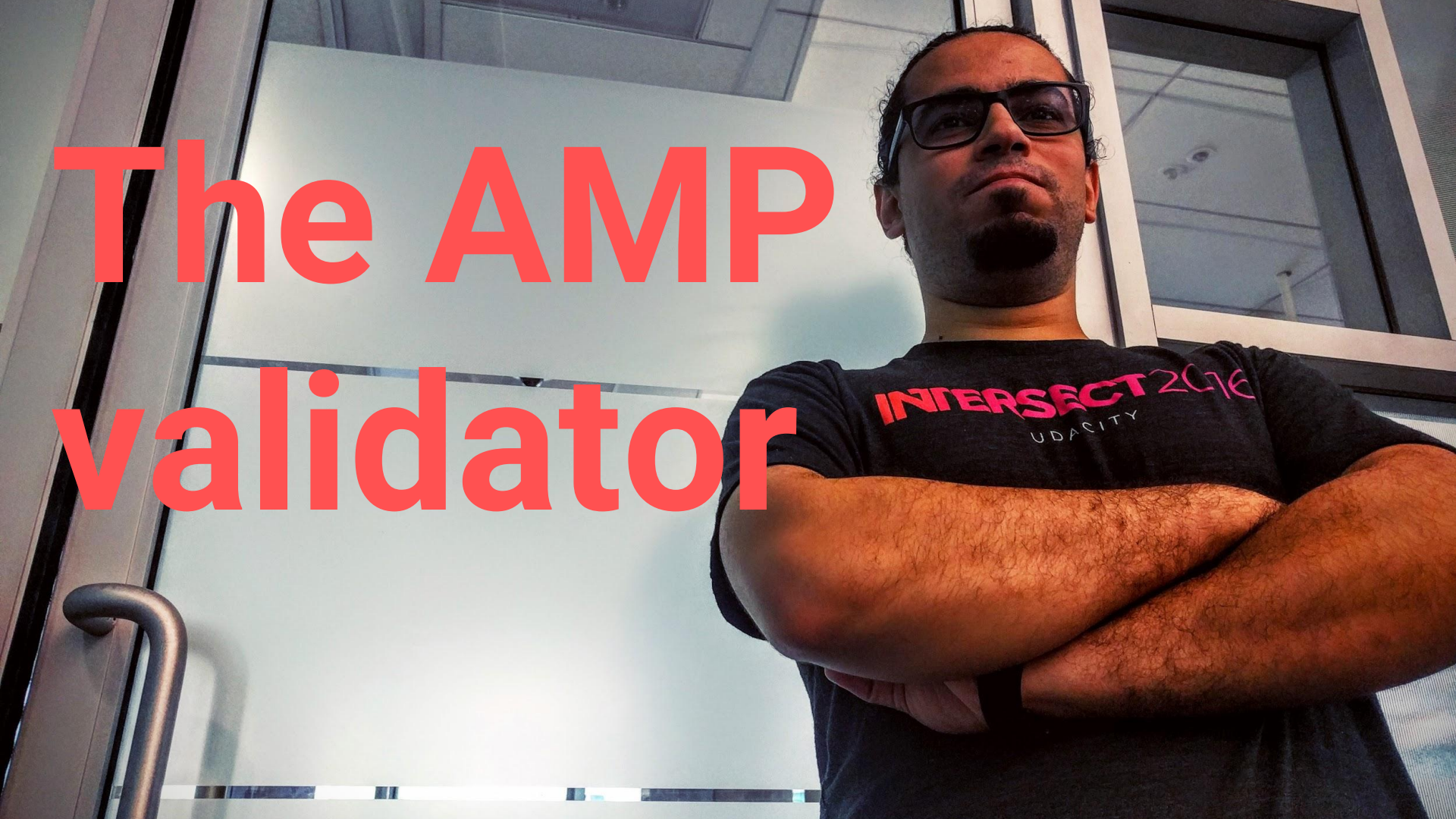


Image by Nascarking licensed as CC-BY-SA-4.0 https://goo.gl/jx30OB


The AMP validator
INTERSECT 2016
UDACITY

What Is AMP?

Malte

https://www.ampproject.org/docs/get_started/about-amp.

#development=1

Nexus 5X ▼ 412 × 732 100% ▼

12:29

Accelerated Mobile Pages Project

What Is AMP?

AMP is a way to build web pages for static content that render fast. AMP in action consists of three different parts:

Sources Network Timeline Profiles 3

Sou... Co... Sni...

v0.js resources-impl.js about-amp.html

top
www.ampproject.org
docs
(no domain)
cdn.ampproject.org
file://
fonts.googleapis.com

```
270     </footer>
271     <script>
272     document.getElementById('menu-button').onclick = functic
273       document.getElementsByTagName('header')[0].classList.t
274       document.querySelector('div.content').classList.toggle
275       document.querySelector('nav').classList.toggle('menu-c
276       return false;
277     };
278     </script>
```

{} Line 271, Column 4

Async Scope Watch

Console Animations Rendering Search

top Preserve log

Filter Regex Hide network messages

All Errors Warnings Info Logs Debug Handled

▶ AMP validation had errors: validator.js:397

▶ https://www.ampproject.org/docs/get_started/about-amp.html:67:14 Missing URL for attribute 'href' in tag 'a'. validator.js:397

▶ https://www.ampproject.org/docs/get_started/about-amp.html:271:4 The tag 'script' is disallowed except in specific forms. validator.js:397

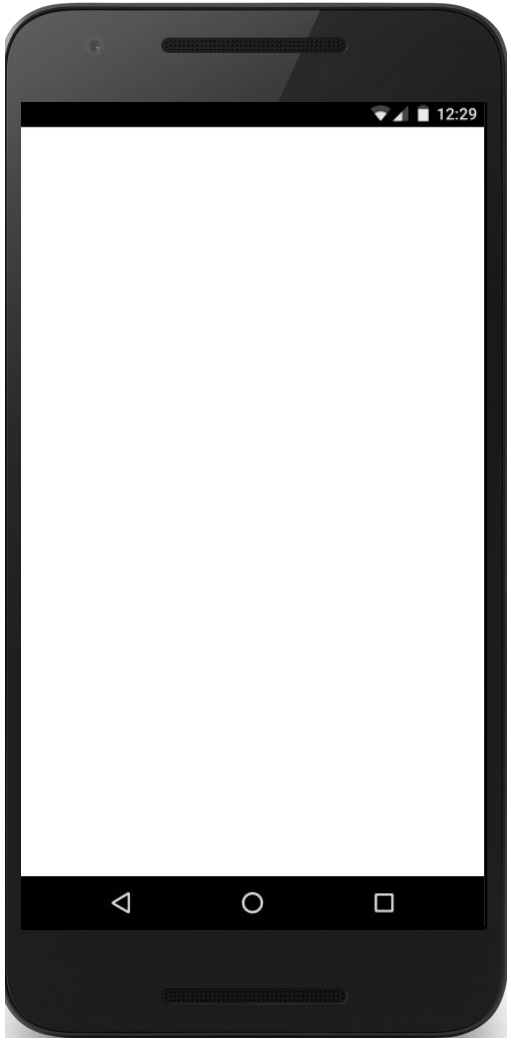
Photo/Copyright by Rob and Stephanie Levy licensed as CC BY 2.0: https://goo.gl/tCjdm8

Manager
ADD A FULL PAGE AD
Uhmm, ...
Developer
Kitten by Ozan Kilic. | licensed as
Creative Commons Attribution 2.0
http://goo.gl/gq7WCB

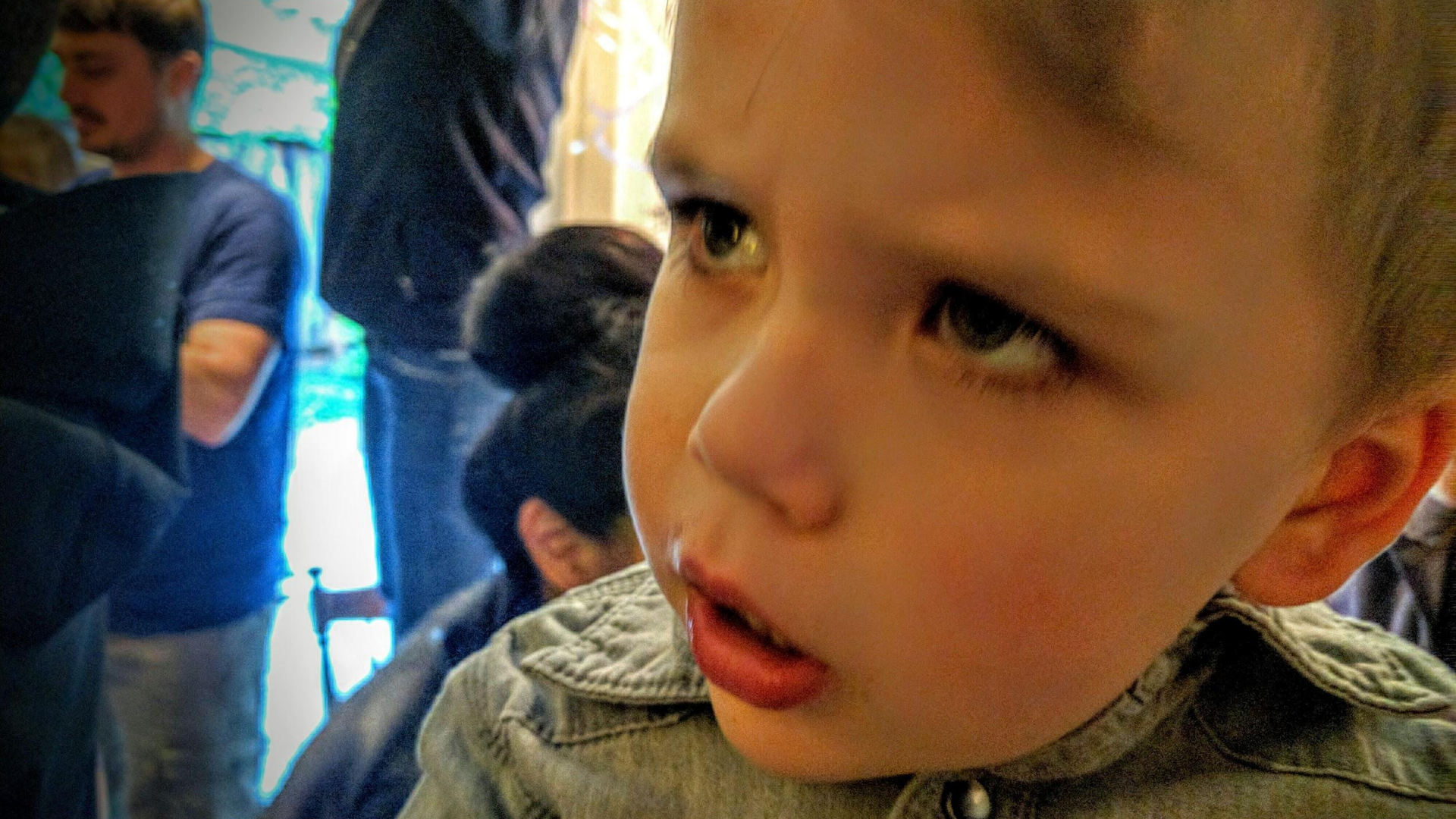
Manager
Nope
ADD A FULL PAGE AD
INTERSECT 2016
UDACITY
AMP validator

Static responsive layout

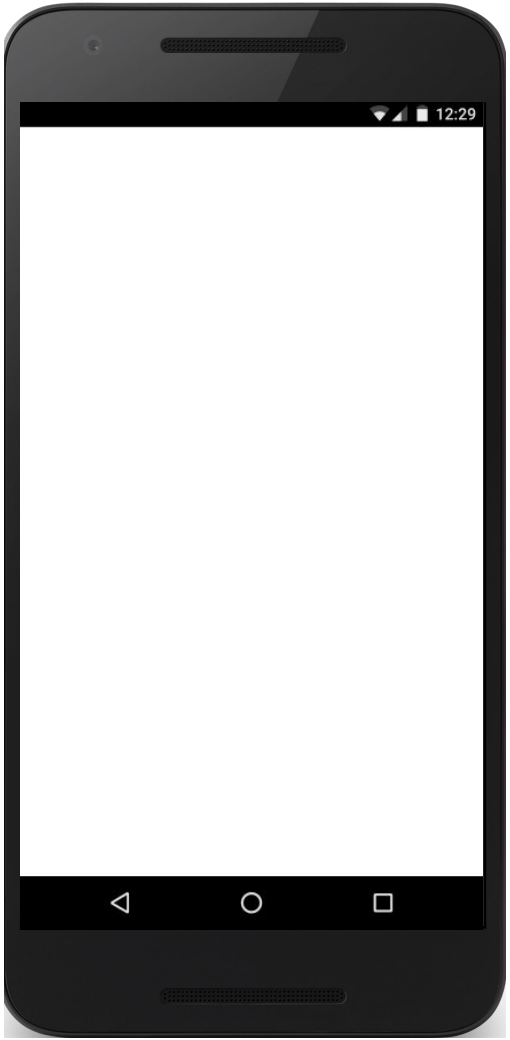
AMP



AMP



This can
NEVER
happen
in AMP



In AMP element sizes have to be defined in the markup.

```
<amp-img src="…"
    width="400"
    height="400"></amp-img>
```

RESPONSIVE?

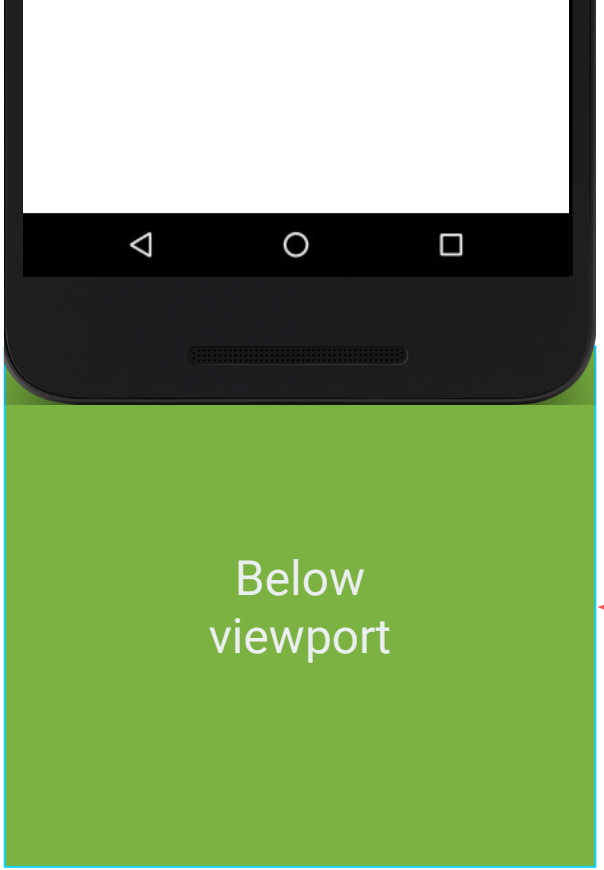
```
<amp-img srcset="…"
    width="400"
    height="400"
    layout="responsive">
</amp-img>
```

Not all sizes and aspect ratios can be known upfront.

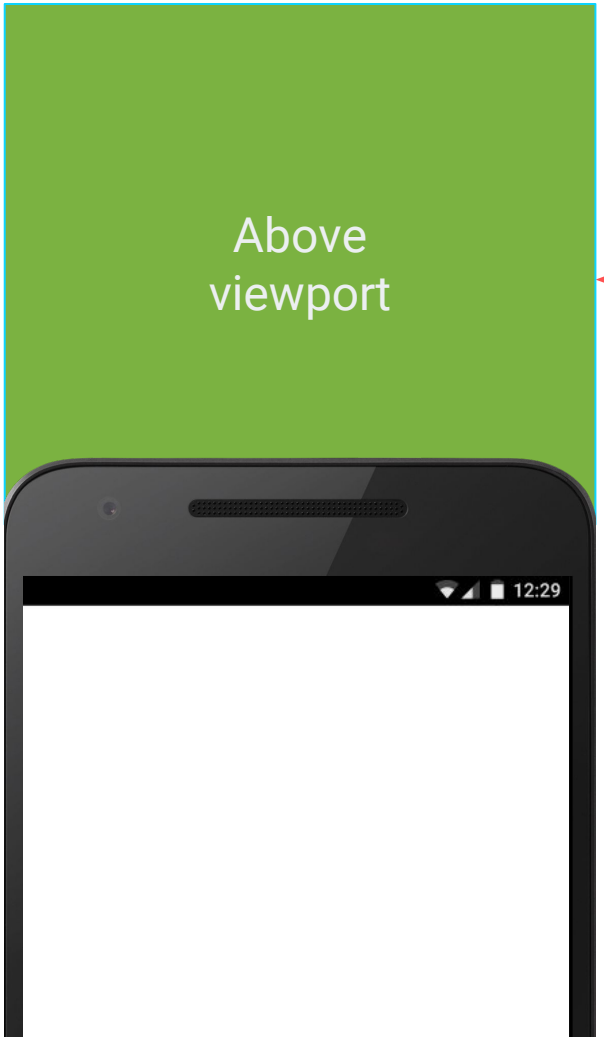
Image by Smial licensed under
CC-BY-SA-2.0-DE: https://goo.gl/Q27aSL

Above viewport

Below viewport

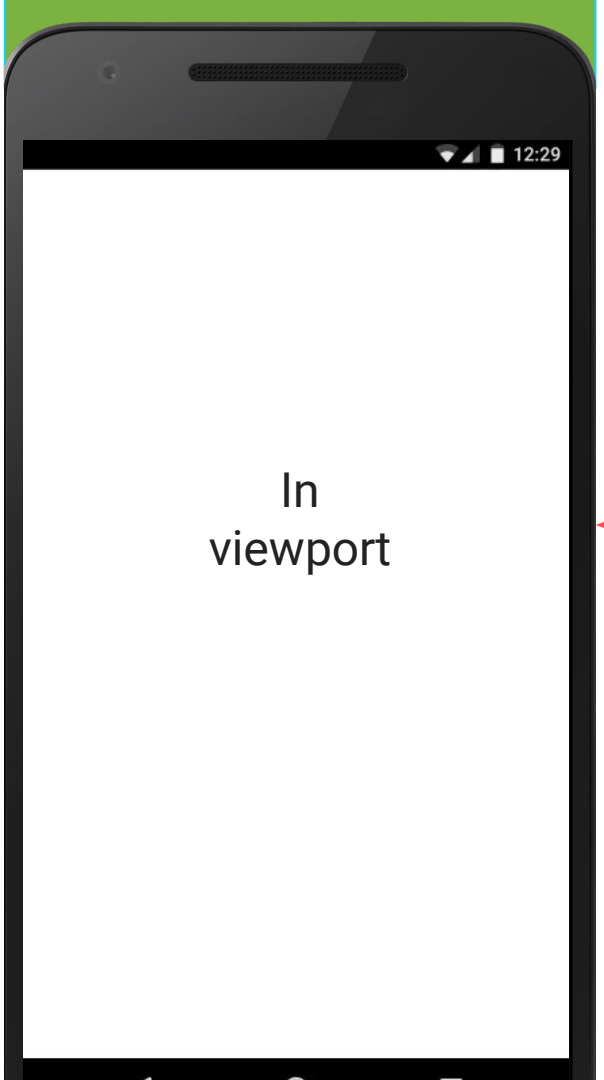


Resizing allowed



Resize allowed.

Scroll position adjusted to keep viewport unchanged



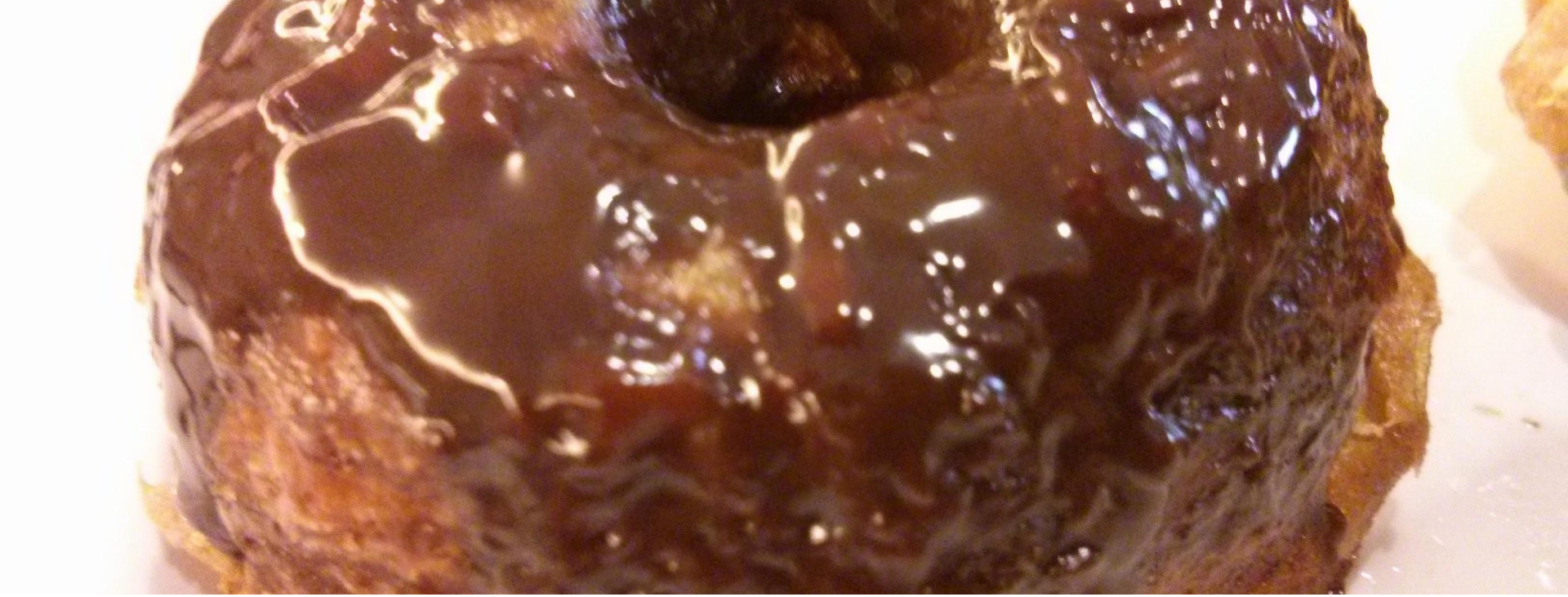
No resizing

Unless user interacted with element.

Analytics

Web analytics are
really important.

Manager
I'll NEED THAT NEW BEACON INSTALLED
OK.
Developer
Kitten by Ozan Kilic. | licensed as Creative Commons Attribution 2.0 http://goo.gl/gq7WCB



But too much of it can be bad for performance.

Could we have both?

Performance and Analytics

AMP

Solution:

Instrument once

Report many times

AMP knows how to talk to major analytics vendors.

E.g. Adobe (Omniture), Chartbeat, IVW, Parsely, Segment, WebTrekk, Google Analytics, GTM, Google AdWords out of 33.

… and supports your in-house analytics solution as well.

Instant loading

Instant loading is achieved through pre-rendering

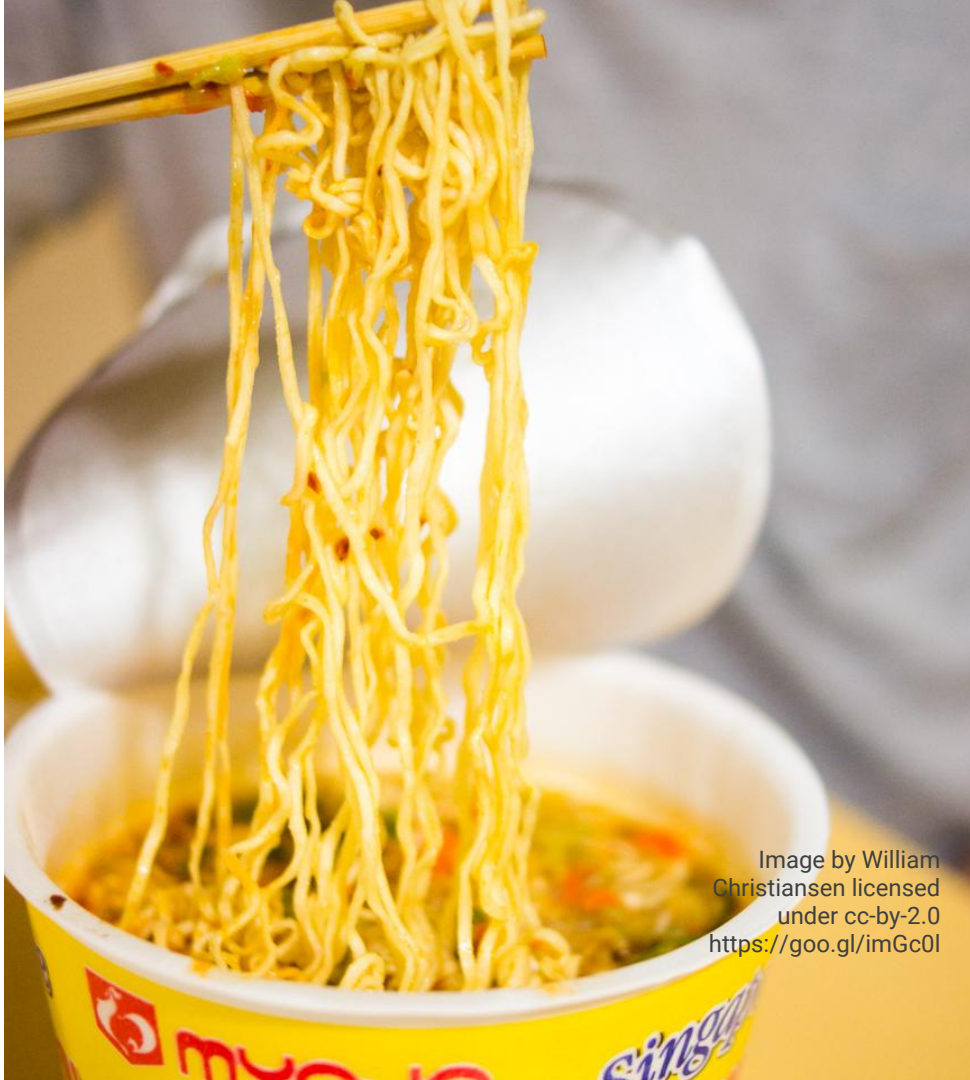


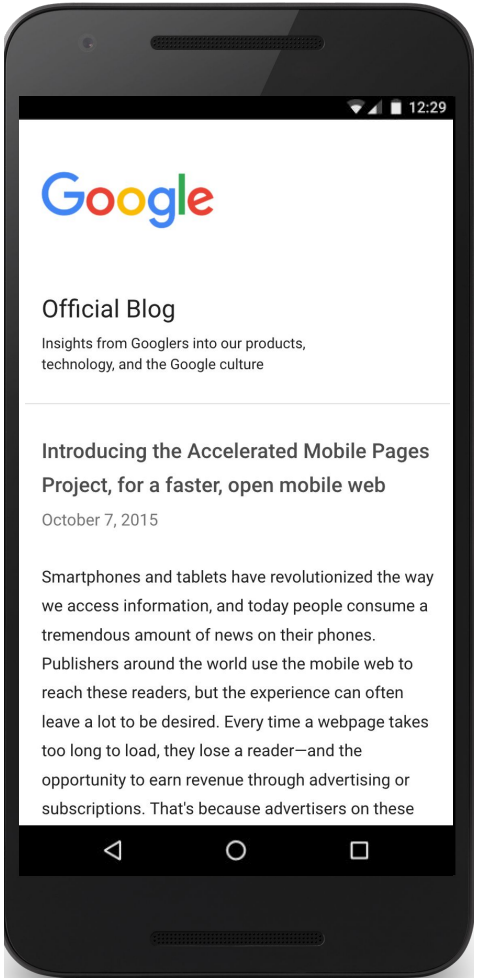
Image by William Christiansen licensed under cc-by-2.0 https://goo.gl/imGc0l

Doesn’t it cost a lot of bandwidth and CPU to render pages that might never be seen?

#1
Humans
Are
Kinda
Slow

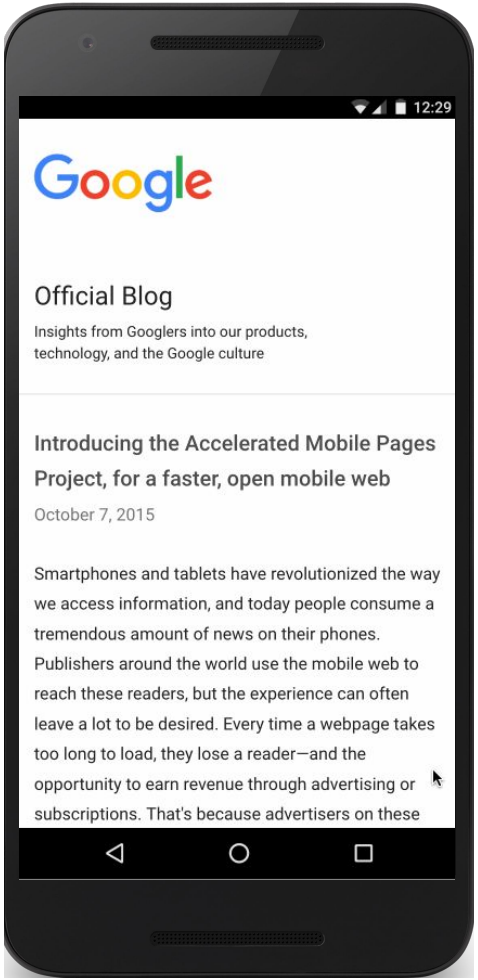
#2

This is a typical website, right?



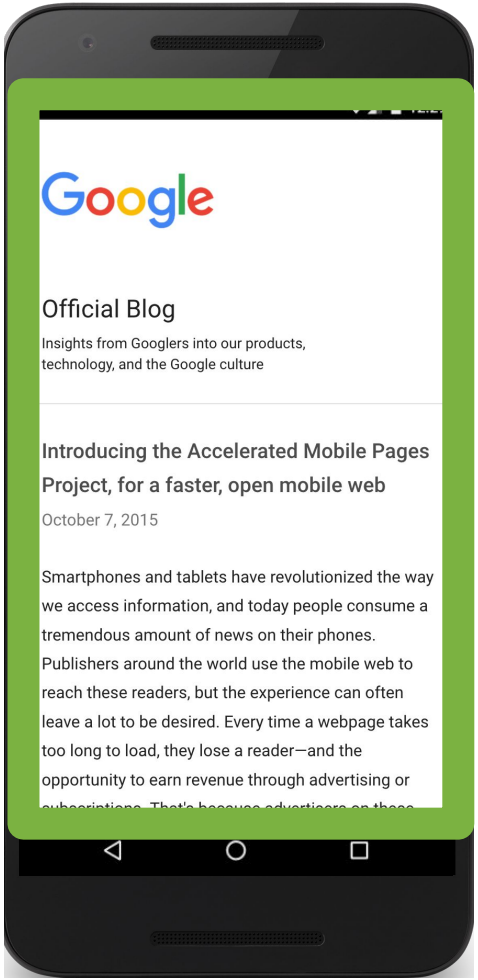
#3

No, this is a typical website!



#4

Prerendering this part of the page is enough.

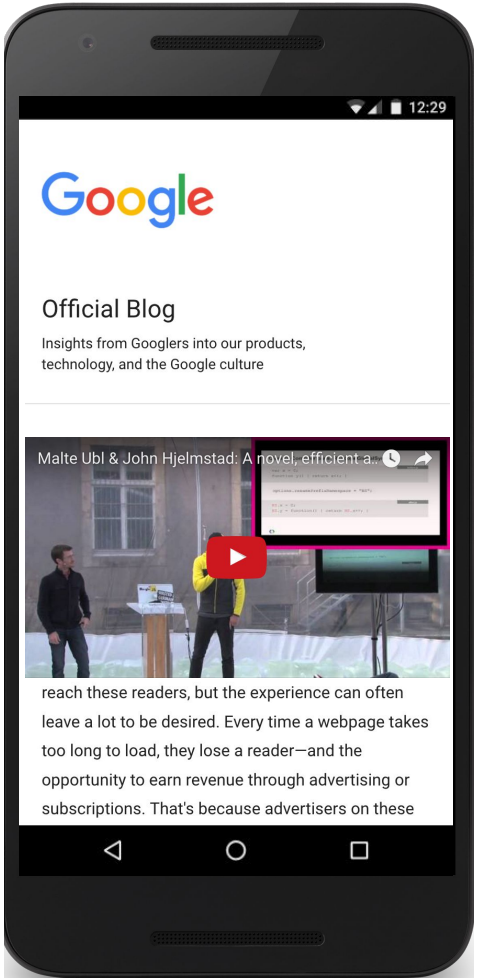


#5

Phones have limited CPU and RAM.

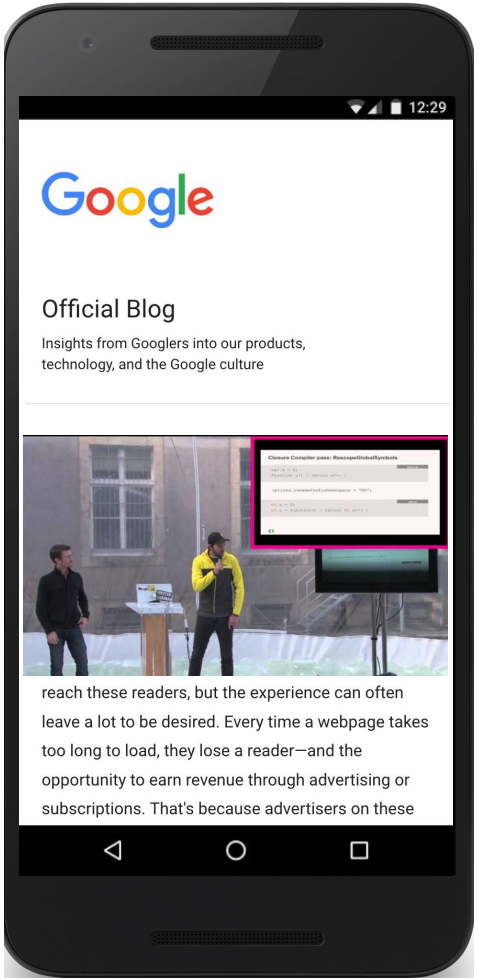
#6

Some embeds may use a lot of CPU.



#7

So, we do this.



Pre-rendering in AMP

Minimal bandwidth

Minimal CPU

AMP

Full list of AMP optimizations
j.mp/amp-speed

AMP

AMP developed a radically new rendering engine for documents*

*not actually true

Mythbusting

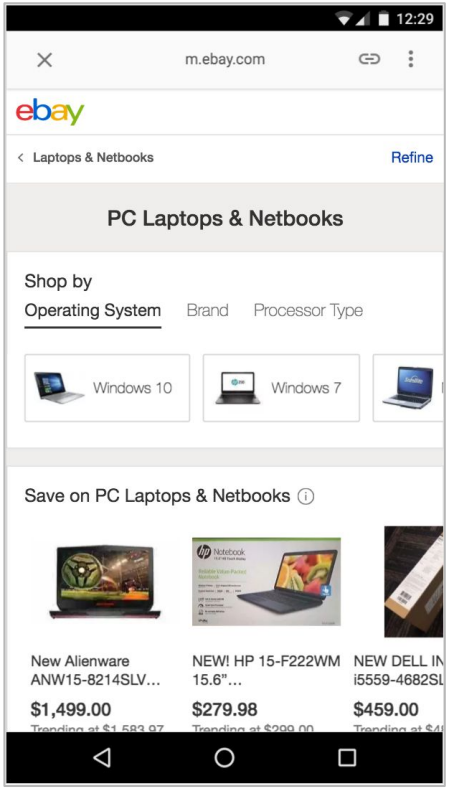
AMPs are just web pages.

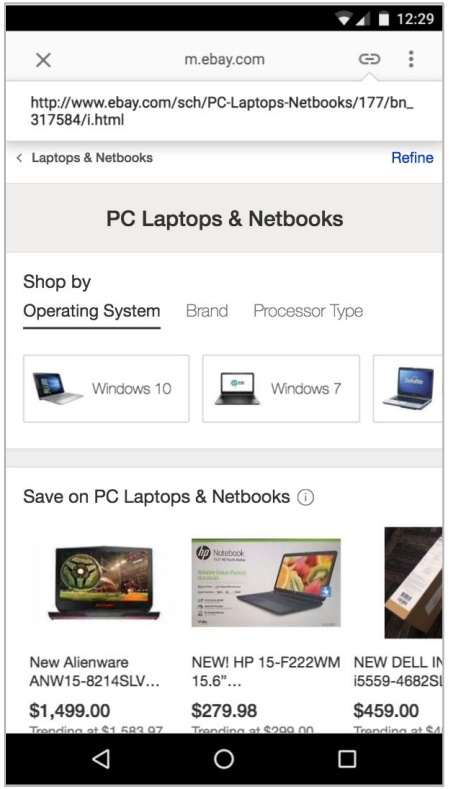
Supported Browsers

AMP

See AMPproject.org

Mythbusting: Your content, your URL





See Google Developers

Mythbusting: AMP & organic ranking

AMP is not a ranking factor.

Mythbusting: AMP only supports Google

AMP supports over 100 ad networks directly (who knew there are that many :). 2 of them are owned by Google.

AMP supports 30+ analytics vendors.

LinkedIn, Pinterest and others have launched AMP support.

AMP works great on Facebook and elsewhere.

AMP in 2017

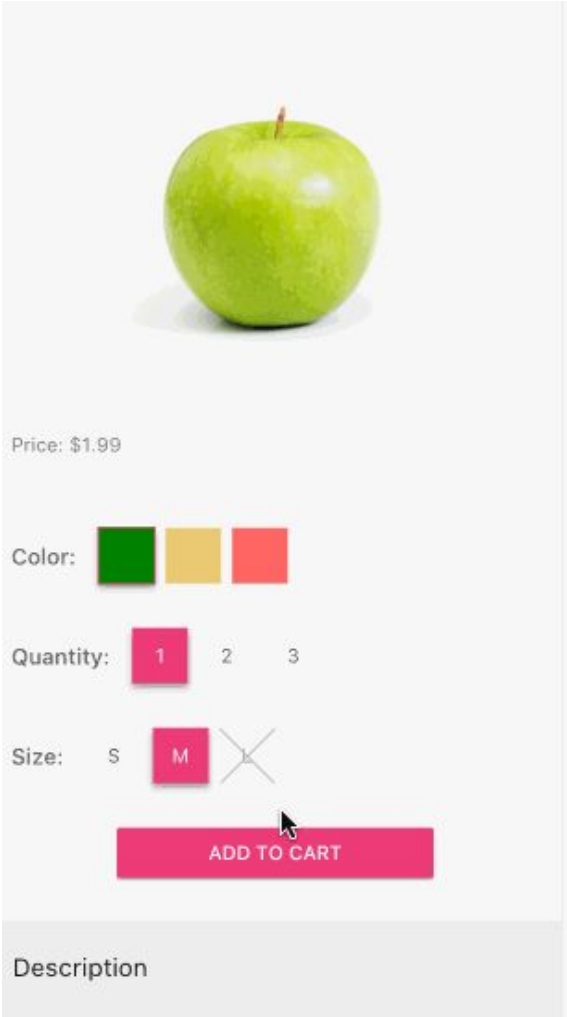
Initially AMP was focused primarily on publishing.

2017 we are going all in on e-commerce and lead generation for AMP.

In 2016 we saw some early adopters in other verticals such as ebay.

December 2016
Launched support for forms.

Launching this spring
Amp-bind for fully interactive pages



And putting it all together…

Good uses of AMP

- Product category pages
- Product detail pages
- Check-out form & registration pages
- Lead generation landing pages
- Product listing pages
- Search & navigation pages
- Articles and blog posts

Summary

AMP is the easiest way to create high performance web pages.

More info at
https://www.ampproject.org/docs/
https://ampbyexample.com/

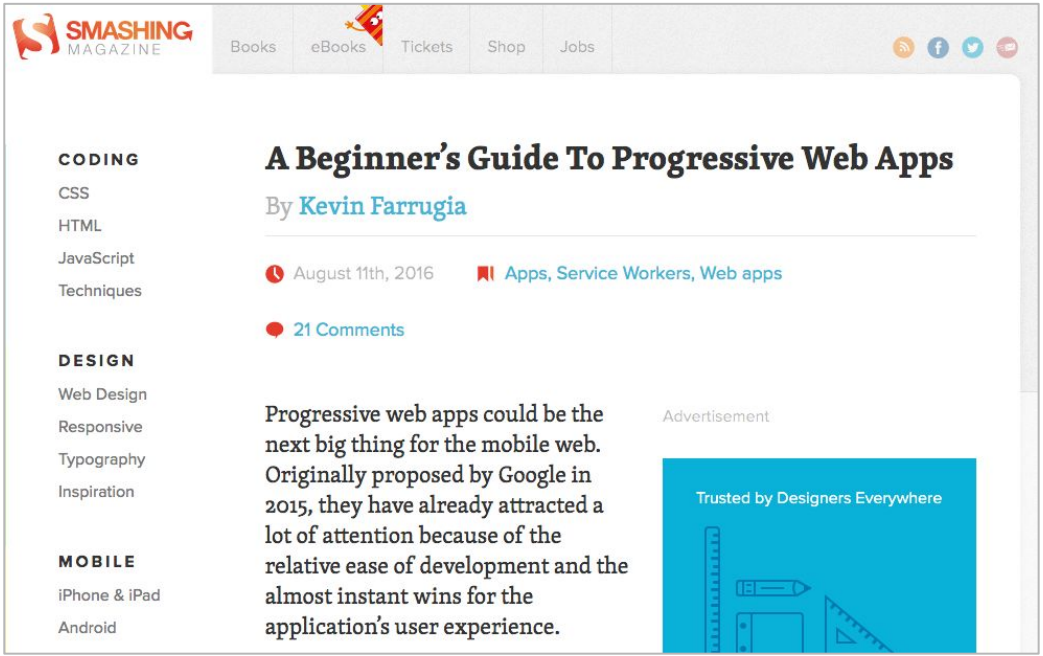
Progressive Web Apps (PWA)

What open web technology can help me?

Accelerated Mobile Pages

Progressive Web Apps

What is a Progressive Web App?

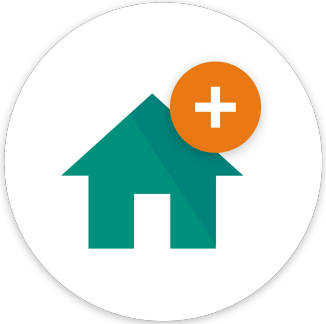


"... takes advantage of the latest technologies to combine **the best of web and mobile apps**. Think of it as a website built **using web technologies** but that acts and feels like an app."

- ***Smashing Magazine***

Elements missing on the web to drive engagement

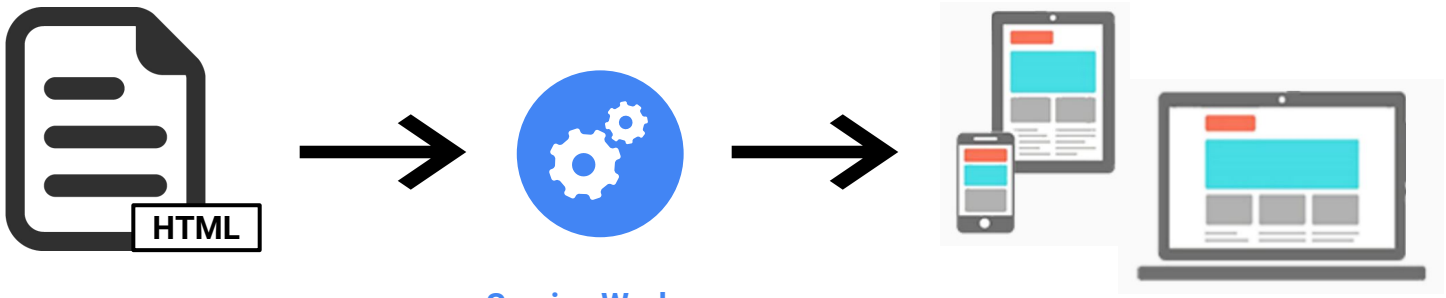
Reliable Performance



Add to Homescreen

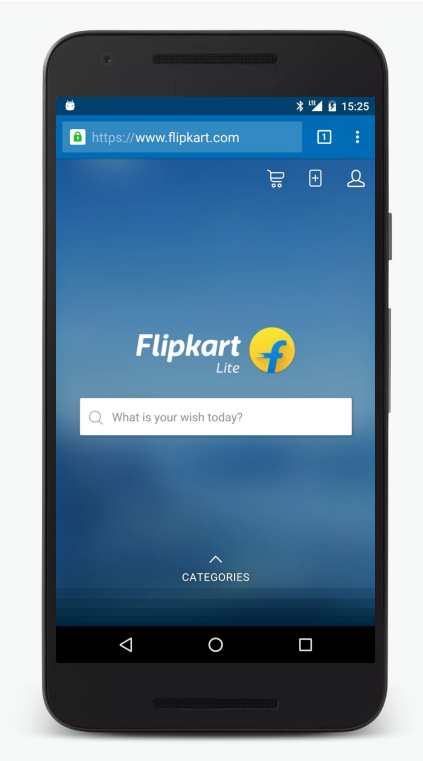
Push Notifications

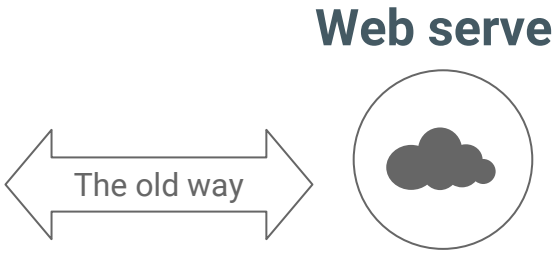
PWA is enhancing core site experience with Service Worker



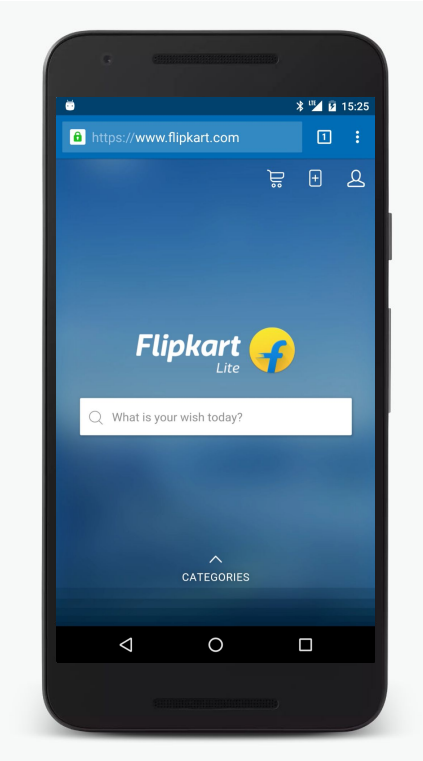
Service Worker:
Client side proxy written in JavaScript, e.g can use this to cache assets for faster loading

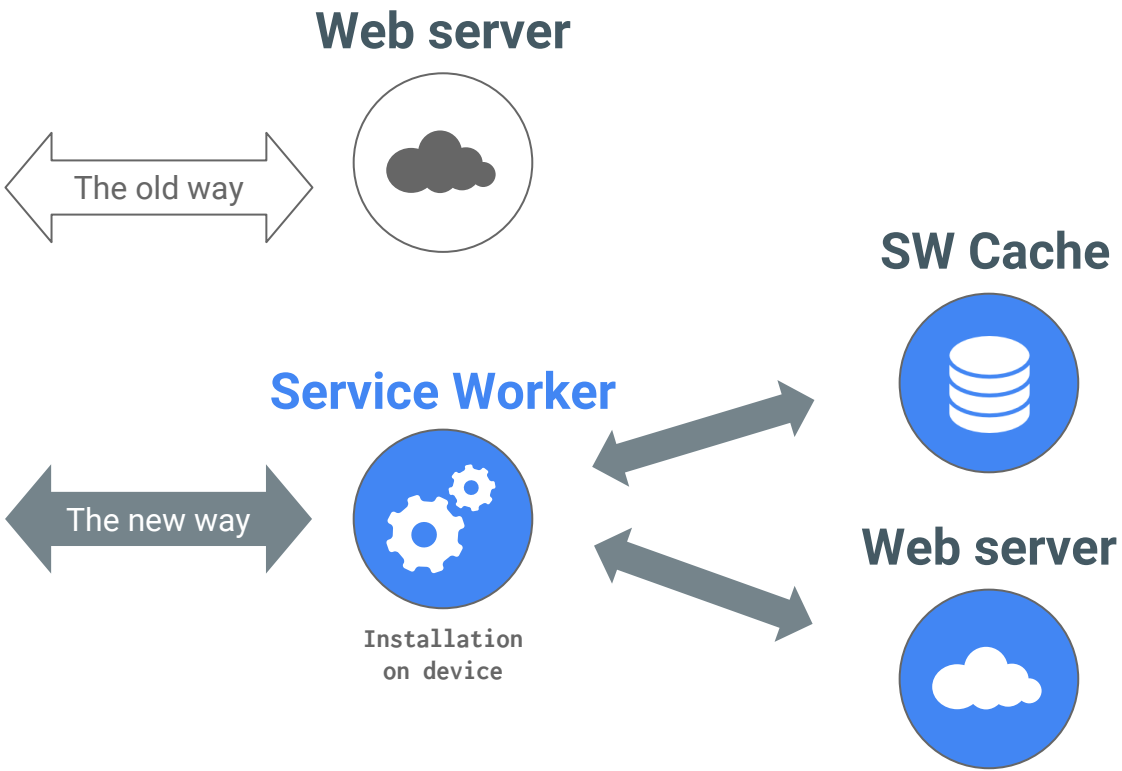
Enable reliable experiences with Service Worker



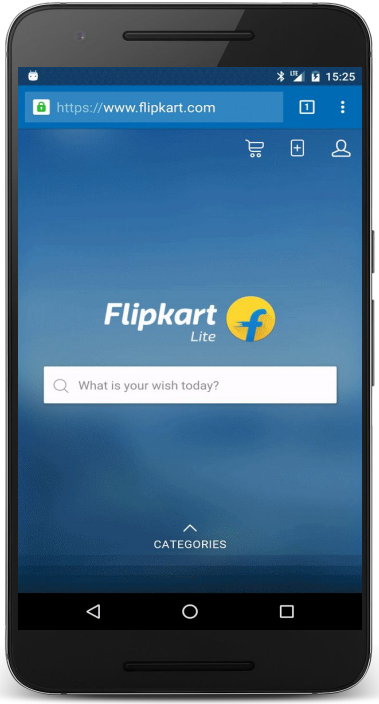


Enable reliable experiences with Service Worker





And show content even on flaky networks or offline

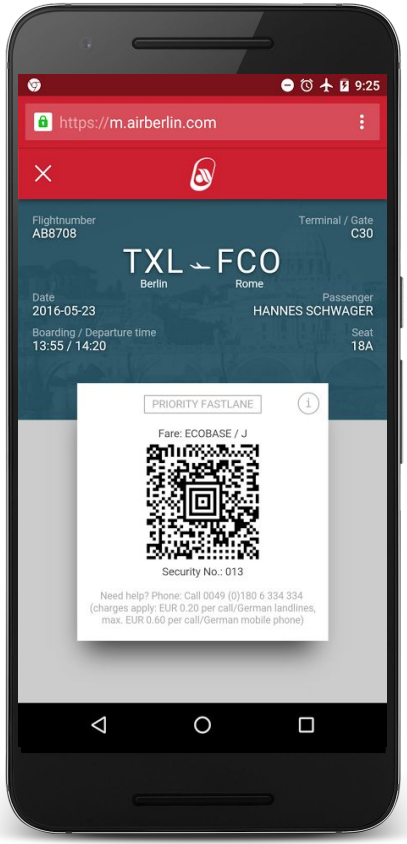


Use Service Worker cache to load content quickly

airberlin

<1 second

initial loading time and
even faster for subsequent loads



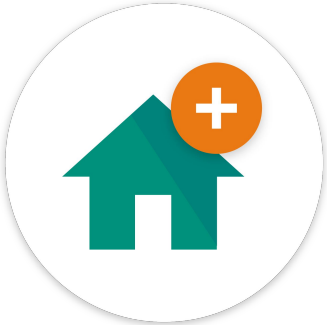
Source: Airberlin blog

AMP + PWA

AMP to start fast – PWA to stay fast

Elements missing on the web to drive engagement

Reliable Performance

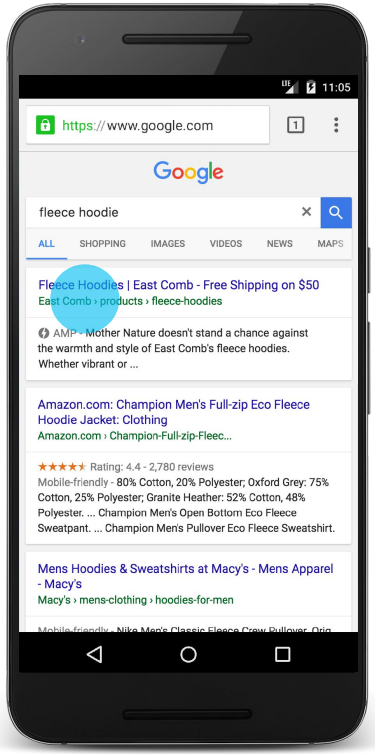


Add to Homescreen

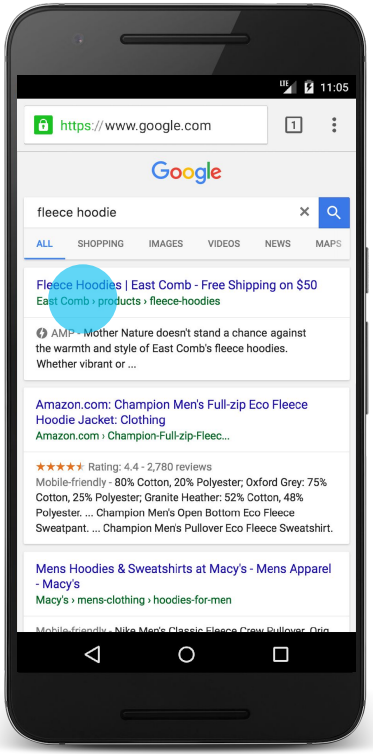
Push Notifications

Let’s buy a hoodie...

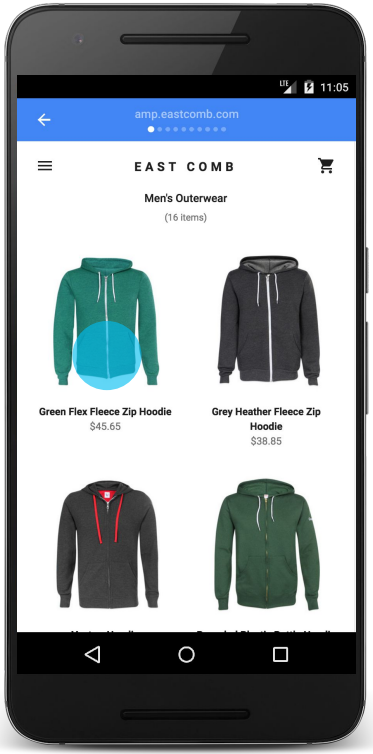
Start with a search



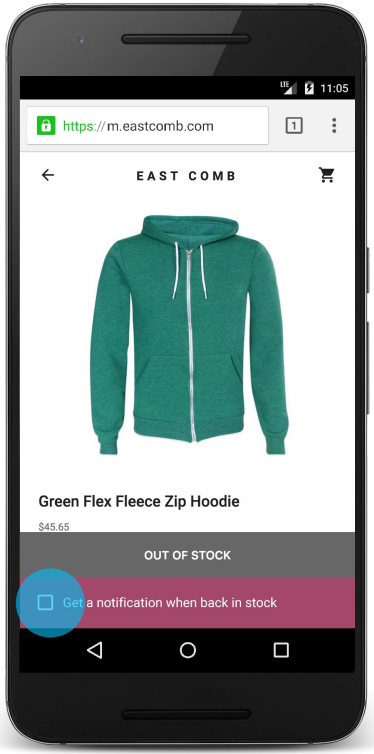
Start with a search



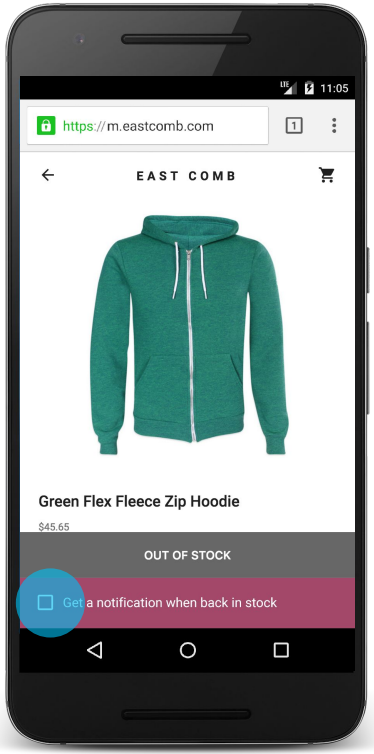
Explore the category, pick your favorite



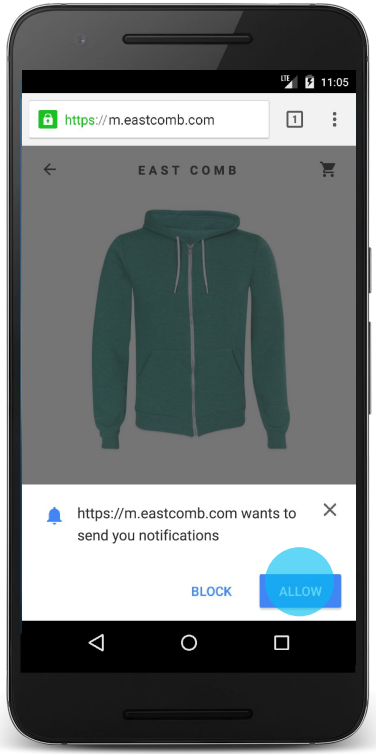
See that it’s out of stock



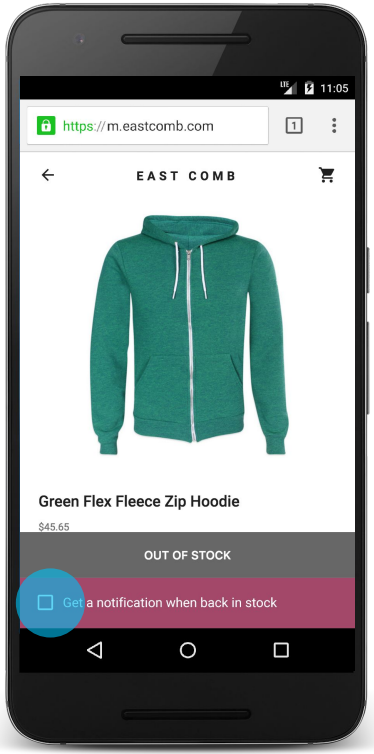
See that it’s out of stock



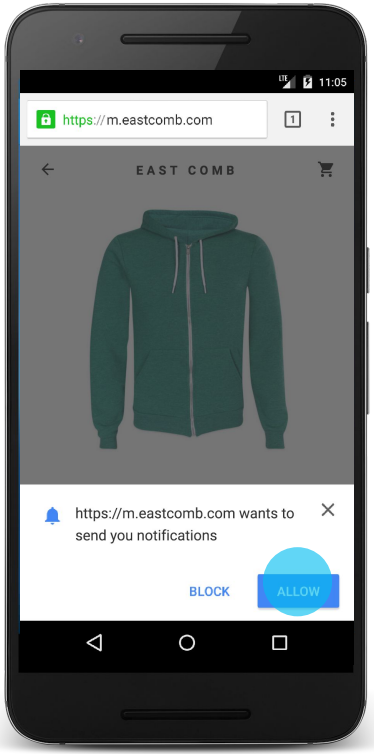
Ask to be notified



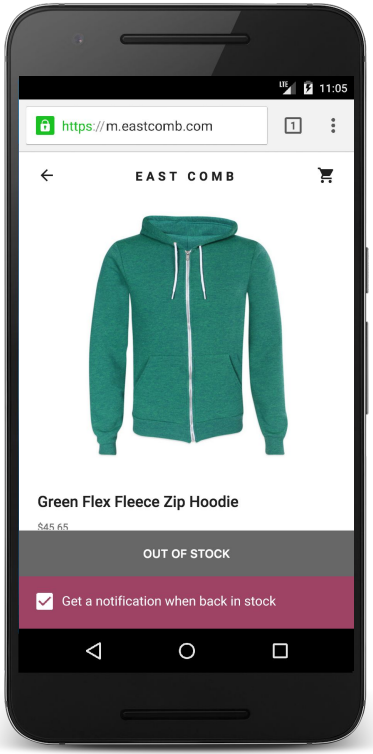
See that it's out of stock



Ask to be notified



Stay up-to-date

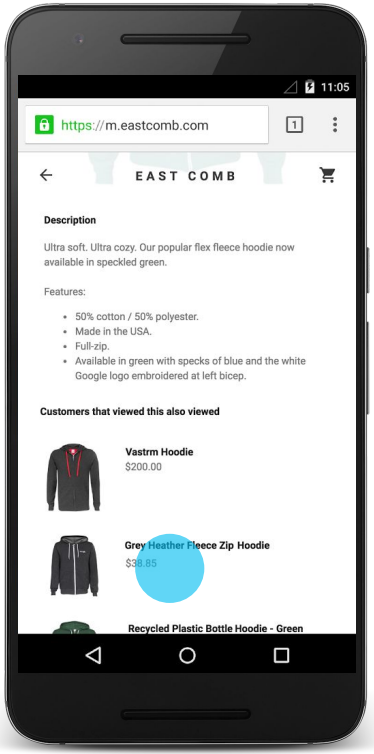


Google

User loses connection

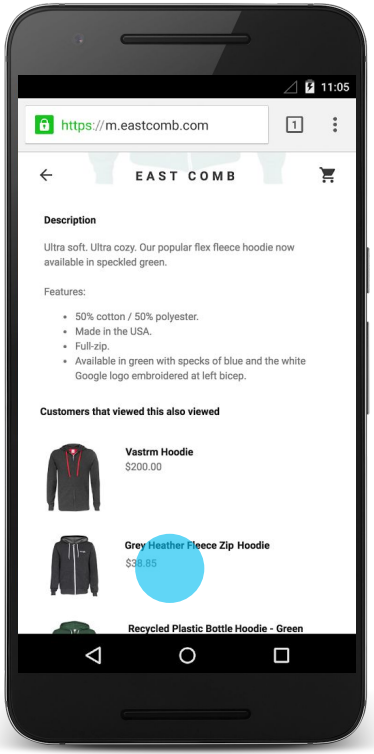
User loses connection

But continues exploring...

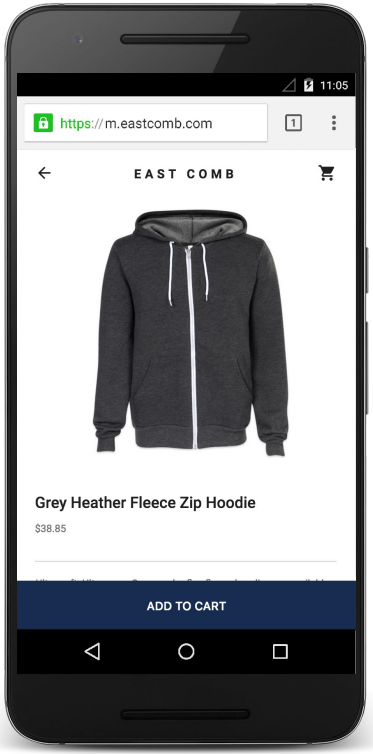


User loses connection

But continues exploring...

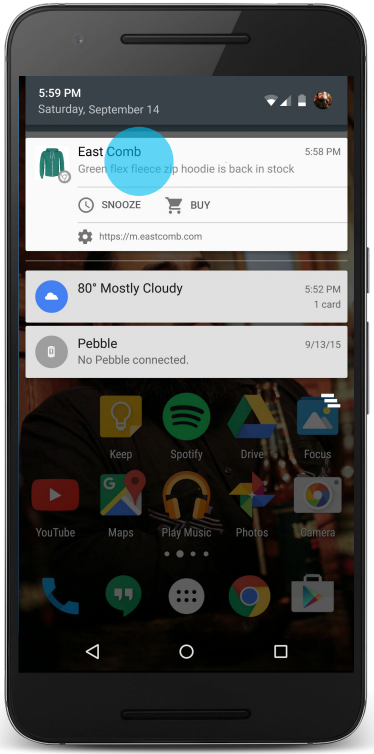


...even with no reception

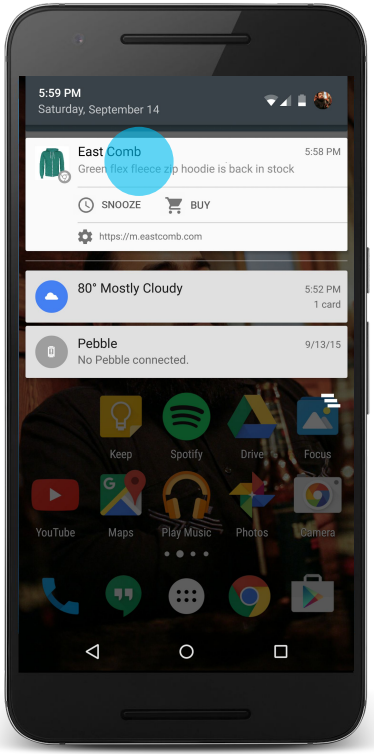


Google

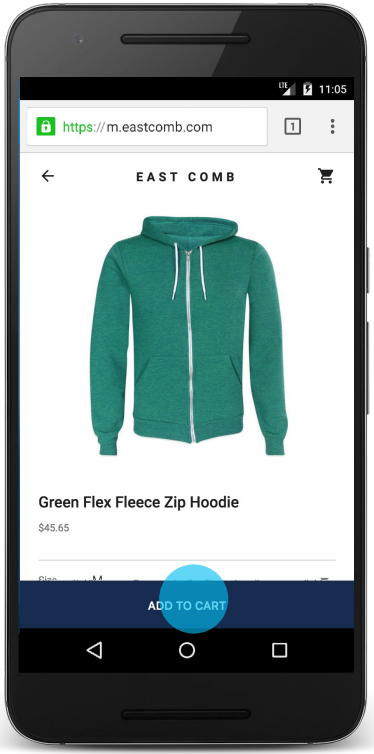
Get notified by the website



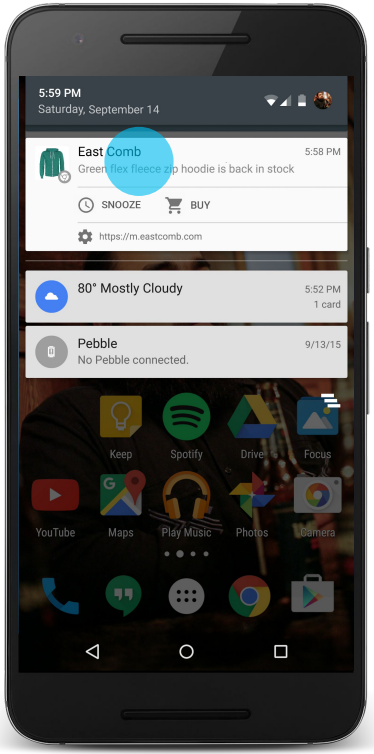
Get notified by the website



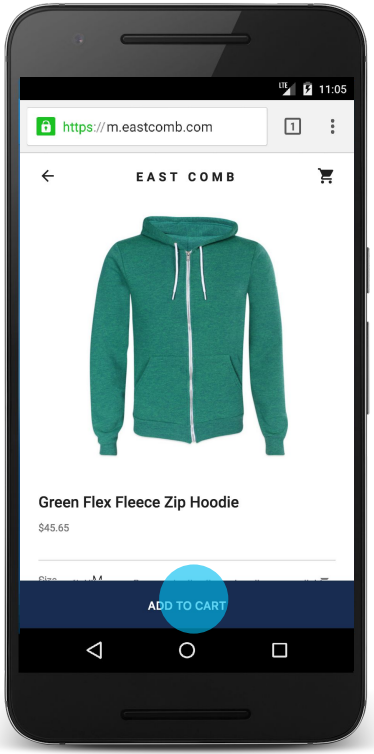
Add to cart



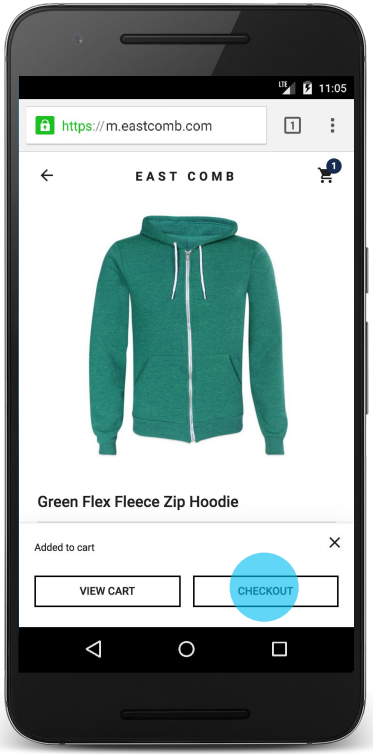
Get notified by the website



Add to cart

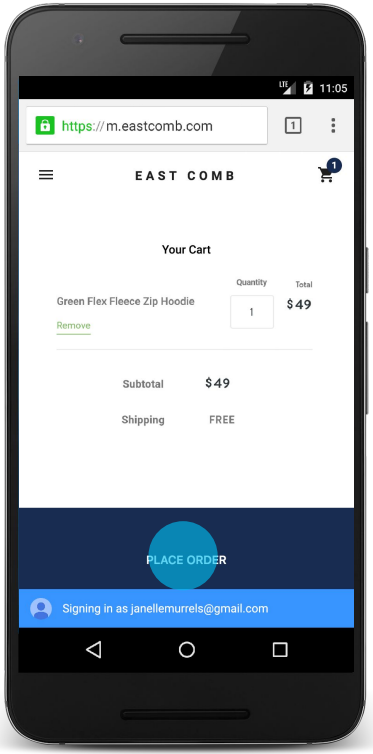


Checkout your basket

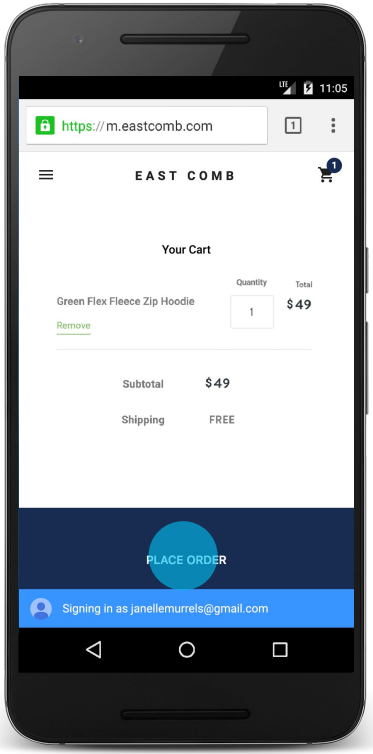


Google

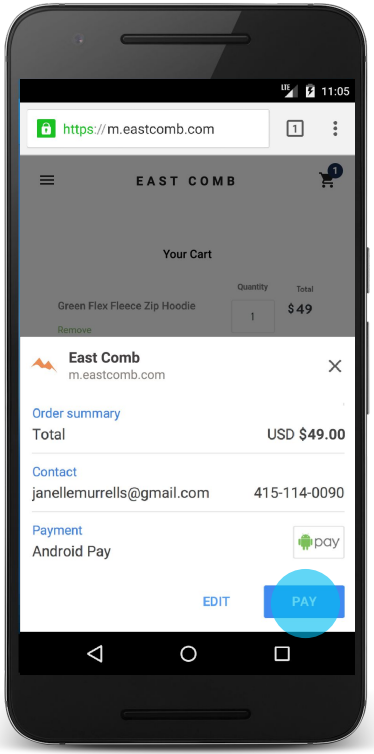
Get signed in automatically



Get signed in automatically

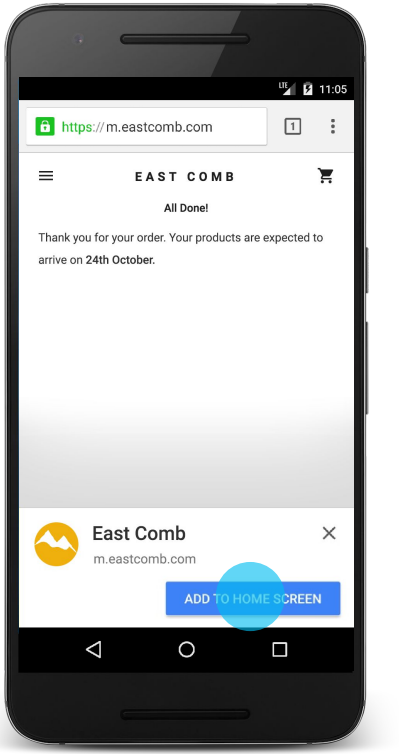


One tap to pay

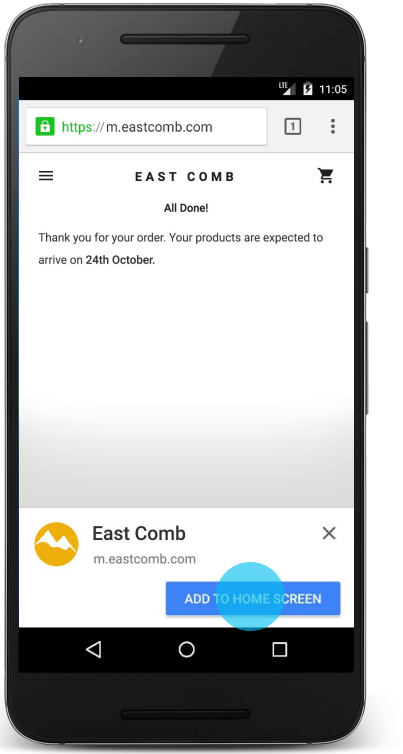


Google

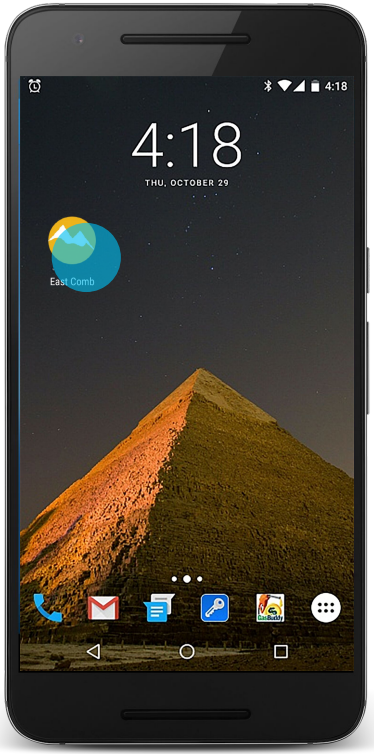
Add to homescreen



Add to homescreen

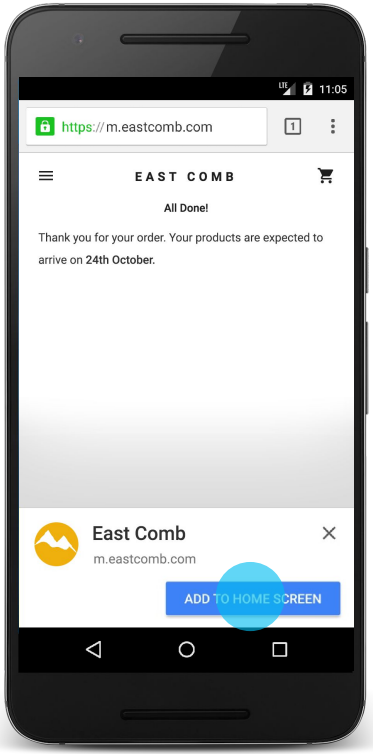


Access with ease

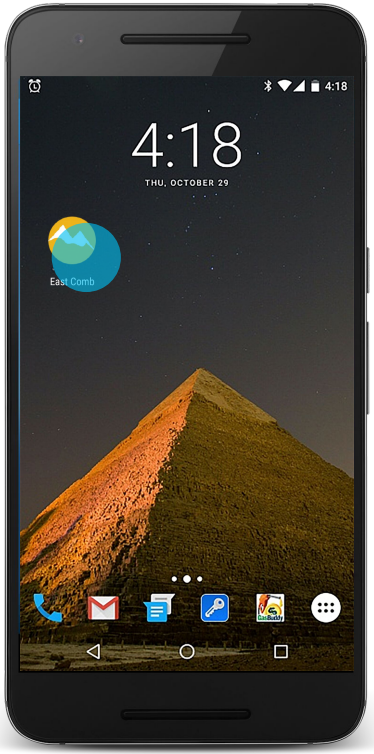


Google

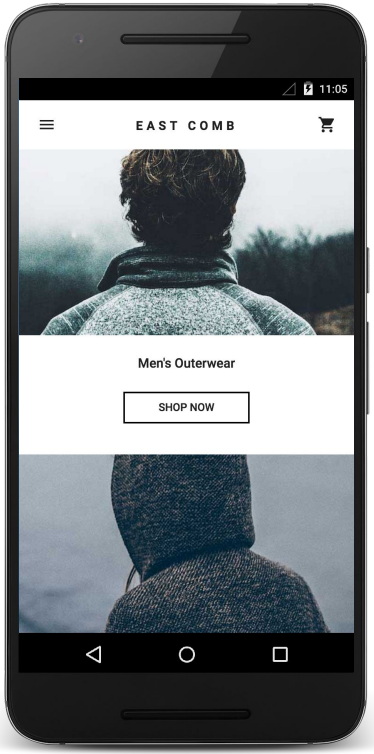
Add to homescreen



Access with ease

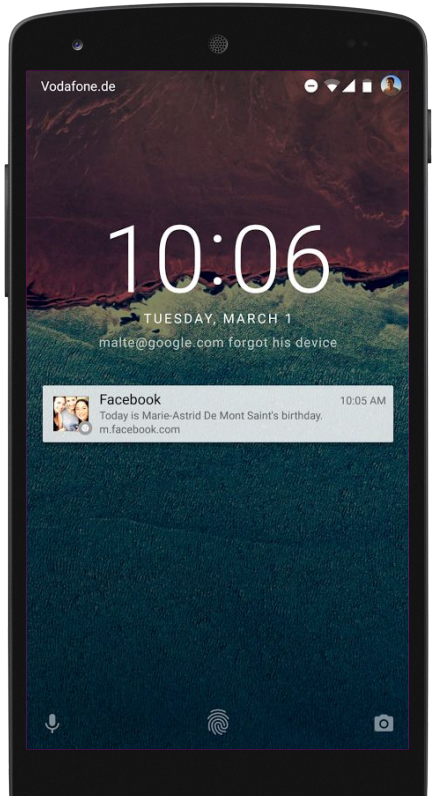


Re-engage on the go



Engage users with home screen icon, fullscreen mode

Re-engage with web push notifications



- System level notifications, like apps
- Ask to notify users with specific information
- Can send notifications even when page closed

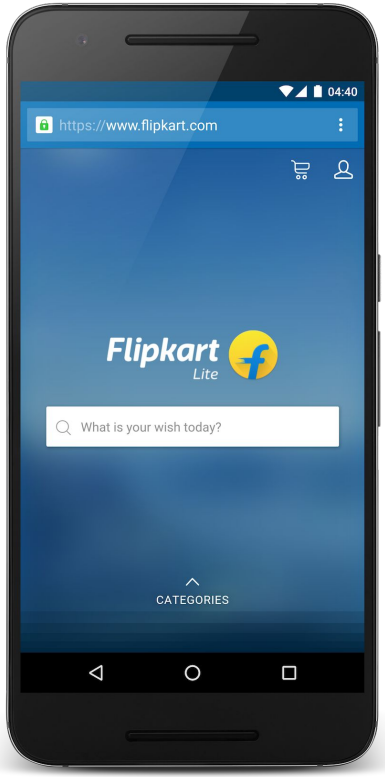
Flipkart leveraged offline access and add to homescreen

40% higher

re-engagement rate

70% greater

Conversion rate among those arriving via Add to Homescreen



Google Source: Google Developers

Investing in fast and smooth experiences pays off

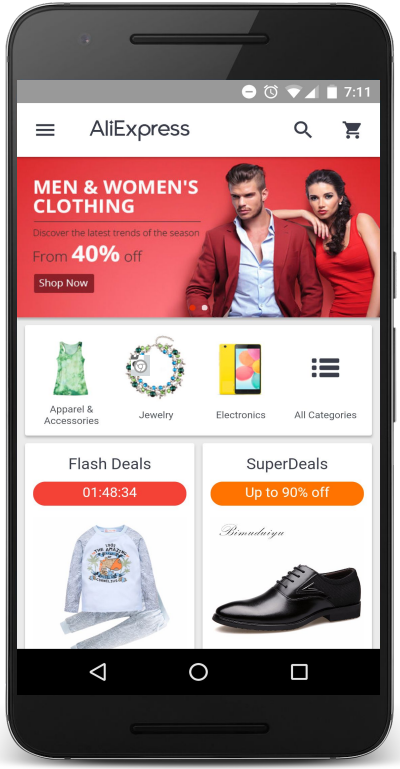
AliExpress

74% increase

in time spent overall and...

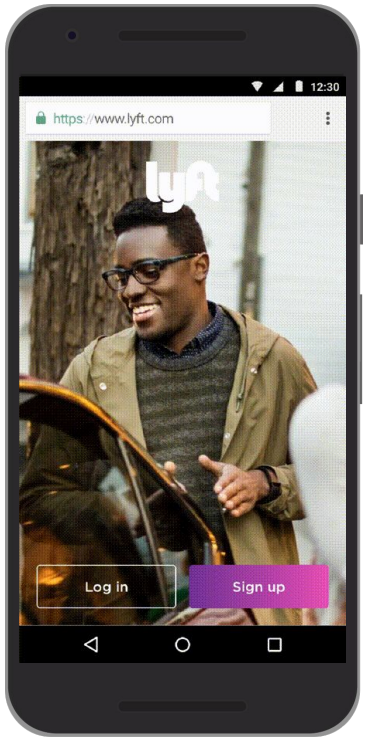
82% more

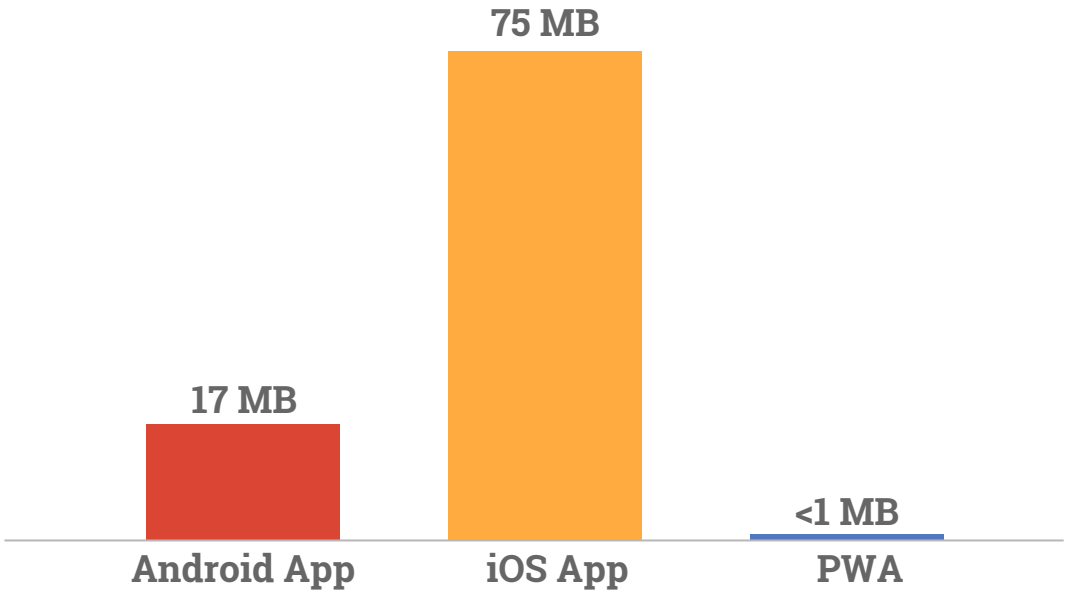
conversions on iOS



Google Source:Google Developers

Download size - Lyft

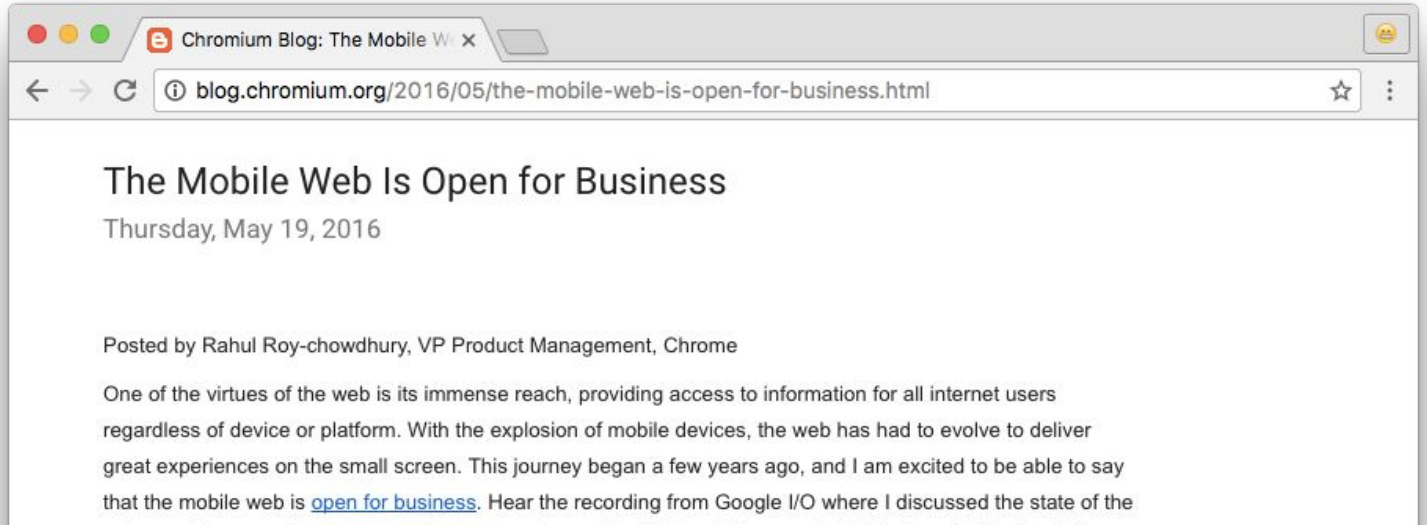




Google Source: Lyft, November 2016

Getting Started.

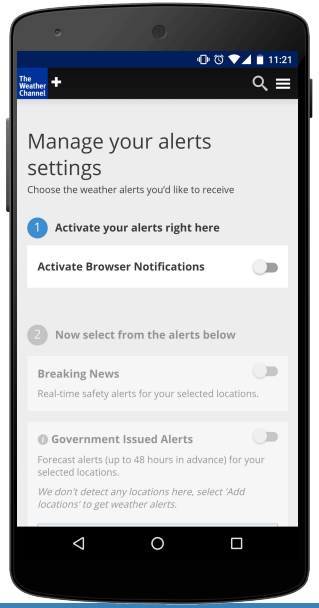
The Mobile Web is Open for Business

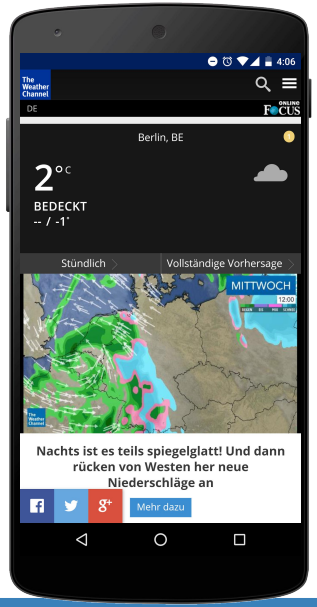


Progressive Enhancement

a single feature

The Weather Company
An IBM Business





https://

https://weather.com

Mid-2015

#movingtohttps

April 2016

Web push: 30 languages
1M opt-ins in 3 months

Oct. 2016

PWAs: 62 languages
Across 178 countries

2017 Plan

PWA for U.S. site

Google

Progressive Enhancement

a single feature

a simple version

Progressive Enhancement

a single feature

a simple version

from the ground up

Thank You!

Proprietary + Confidential

Start building today!

Explore AMP

ampproject.org

ampbyexample.com

Explore PWA

https://developers.google.com/web/

Case studies

Sign In and Checkout

https://g.co/CredentialManagementAPI

https://g.co/PaymentRequestAPI

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