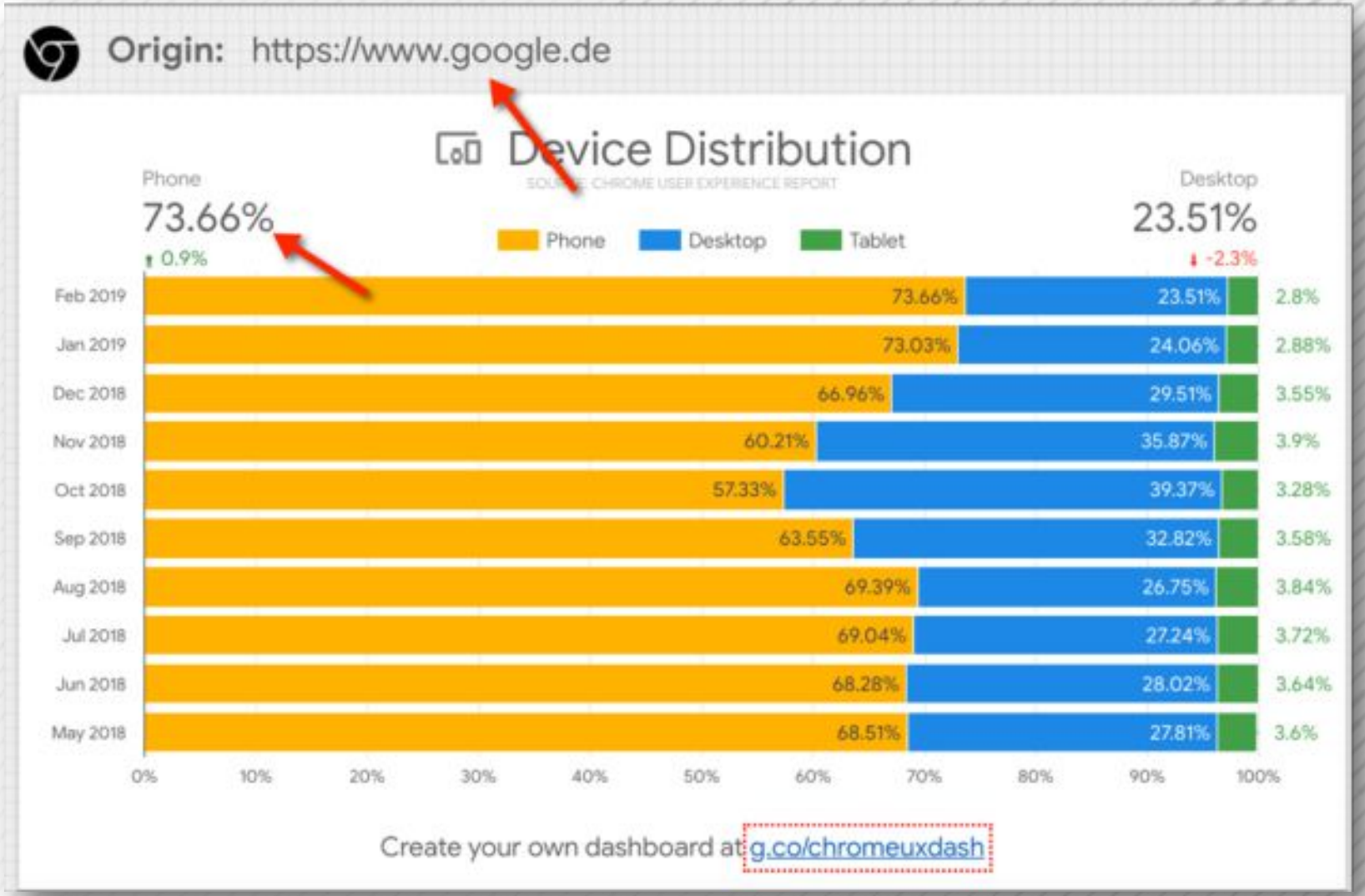
The state of the mobile web performance in Germany 2019

Bartosz Góralewicz

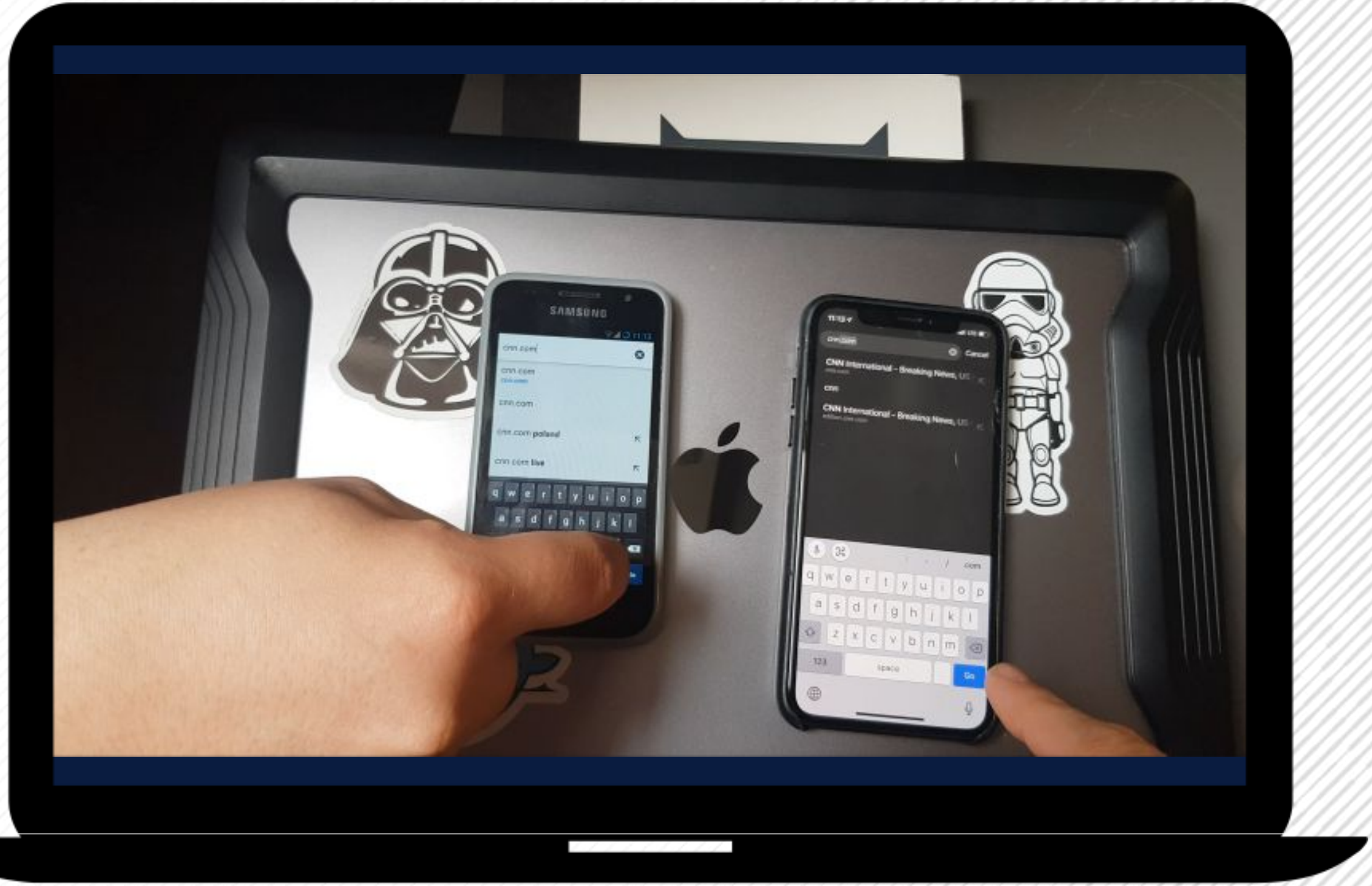
bart_goralewicz

www.onely.com

Why mobile web performance?




Desktop is dead.
google.de 23%
amazon.de 26%
zalando.de 25%


SAMSUNG
cnn.com
cnn.com
cnn.com
cnn.com
CNN International - Breaking News
cnn
CNN International - Breaking News

Medium Javascript

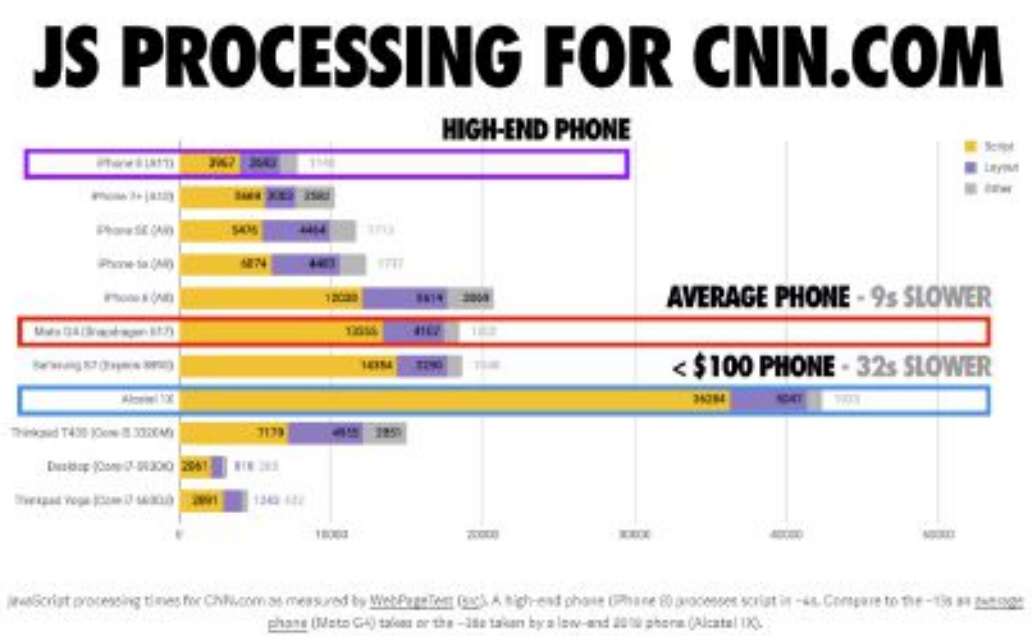
The Cost Of JavaScript In 2018

Addy Osmani Follow

Aug 1, 2018 · 20 min read

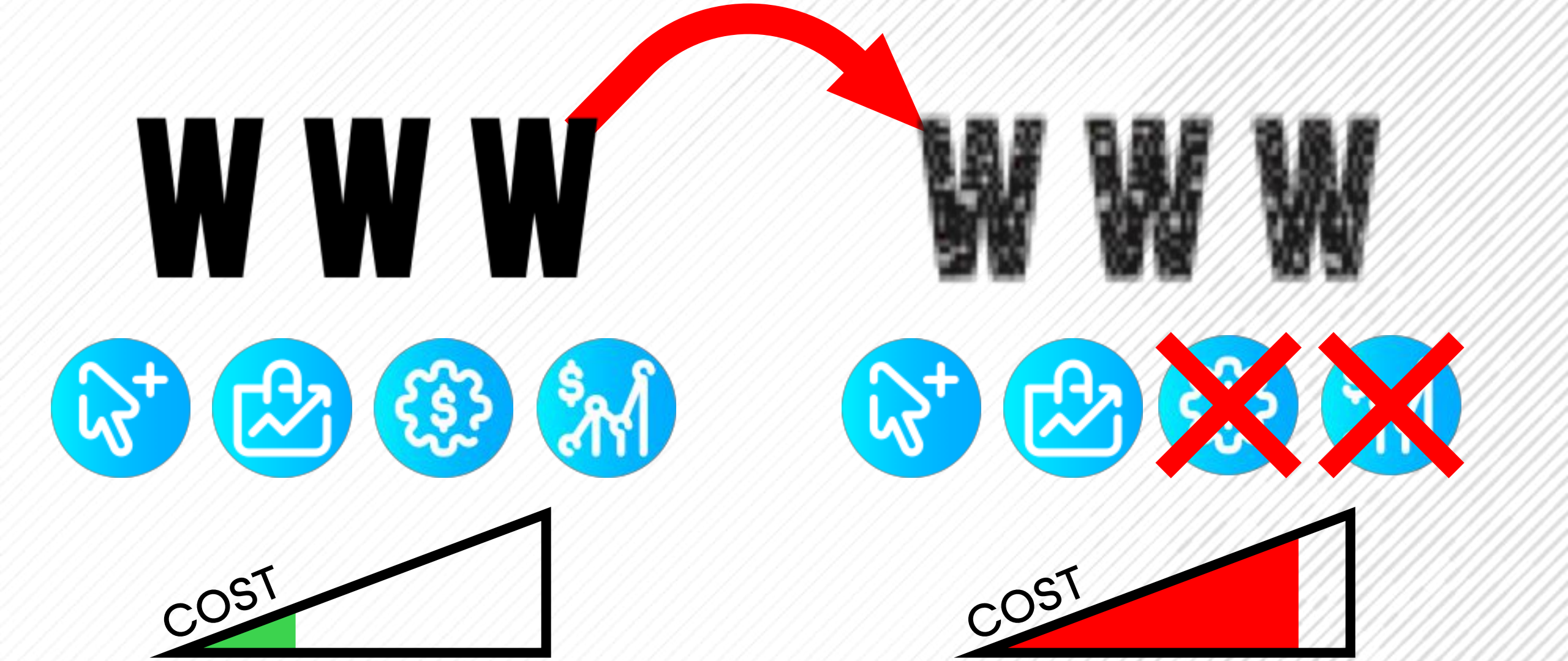
Building **interactive sites** can involve sending JavaScript to your users. Often, **too much** of it. Have you been on a mobile page that looked like it had loaded only to tap on a link or tried to scroll and *nothing* happens?

Byte-for-byte, JavaScript is still the most expensive resource we send to mobile phones, because it can delay interactivity in large ways.



JavaScript processing times for CNN.com as measured by WebPageTest (src). A high-end phone (iPhone 8) processes script in ~4s. Compare to the ~13s an average phone (Moto G4) takes or the ~36s taken by a low-end 2016 phone (Alcatel 1X).

= average phone


W W W
W W W
COST
COST

Striving for balance

OK

Very fast

Is it right?
Is it right?
Is it right?
Is it right?
Is it right?
Is it right?
Is it right?
Is it right?
Is it right?
Is it right?
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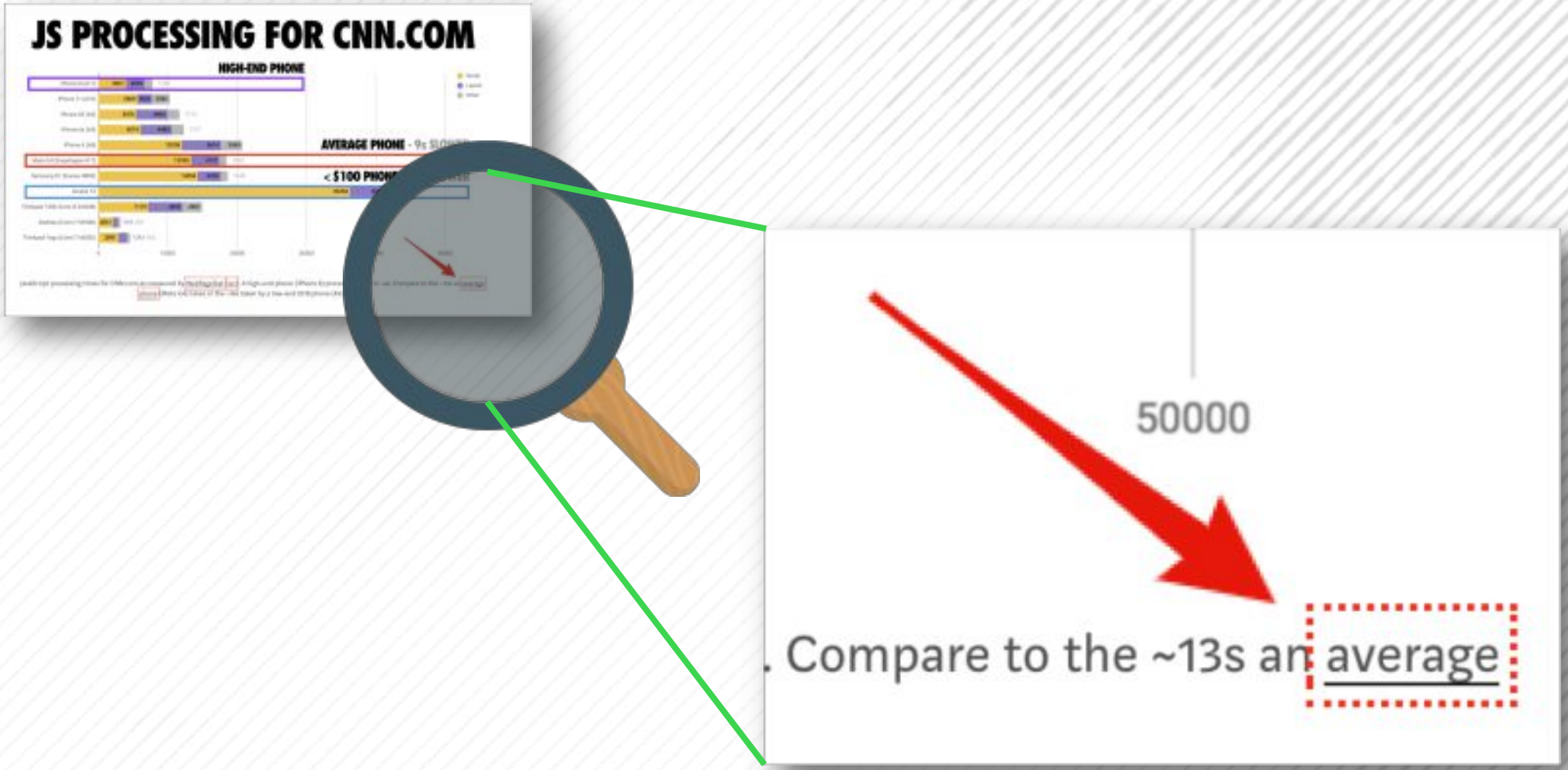
Is it right?
Is it right?



Link goes to

https://infrequently.org/2017/10/can-you-afford-it-real-world-web-performance-budgets/

Let's look at this source:

*"I suggested the **Moto G4 last year** and recommend it or the **Moto G5 Plus this year.**"*

This post is from 2017

I suggested the Moto G4 last year and the Moto G5 Plus this year.

Moto G4 was a median phone in 2016!

It's 2019

Moto G5 Plus

2017

177 EUR

Snapdragon 625 @ 2.0 GHz

CPU Benchmark Scores

Single-Core Score	Multi-Core Score
834	4112

Moto G4

2016

88 EUR

Snapdragon 617 @ 1.5 GHz

CPU Benchmark Scores

Single-Core Score	Multi-Core Score
670	2248

2017

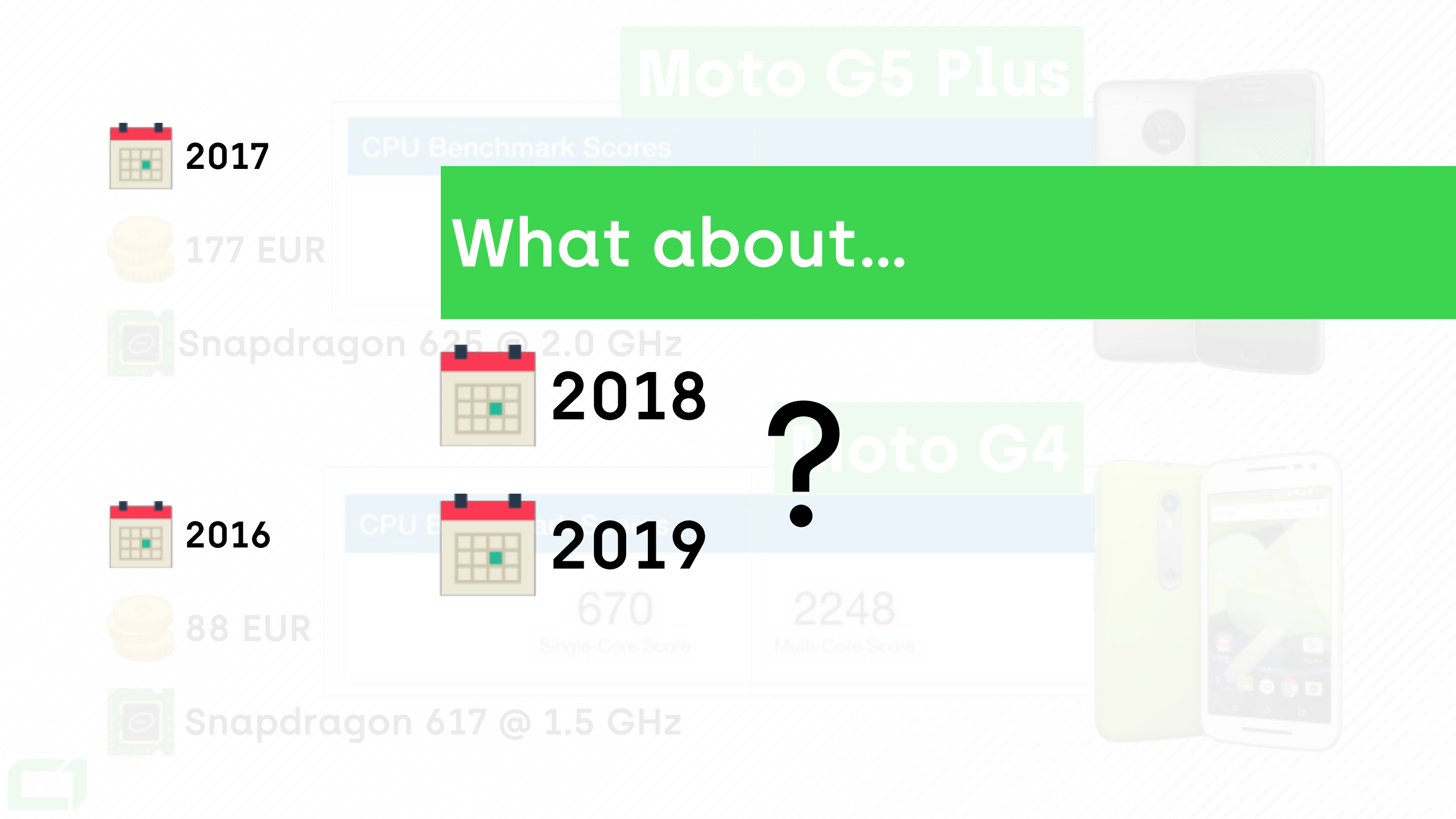
2016

What about...

2018

2019

?



Lets translate it to English

Moto G5 Plus

CPU Benchmark Scores	
834	4112
Single-Core Score	Multi-Core Score

iPhone 6s

CPU Benchmark Scores	
2268	3918
Single-Core Score	Multi-Core Score

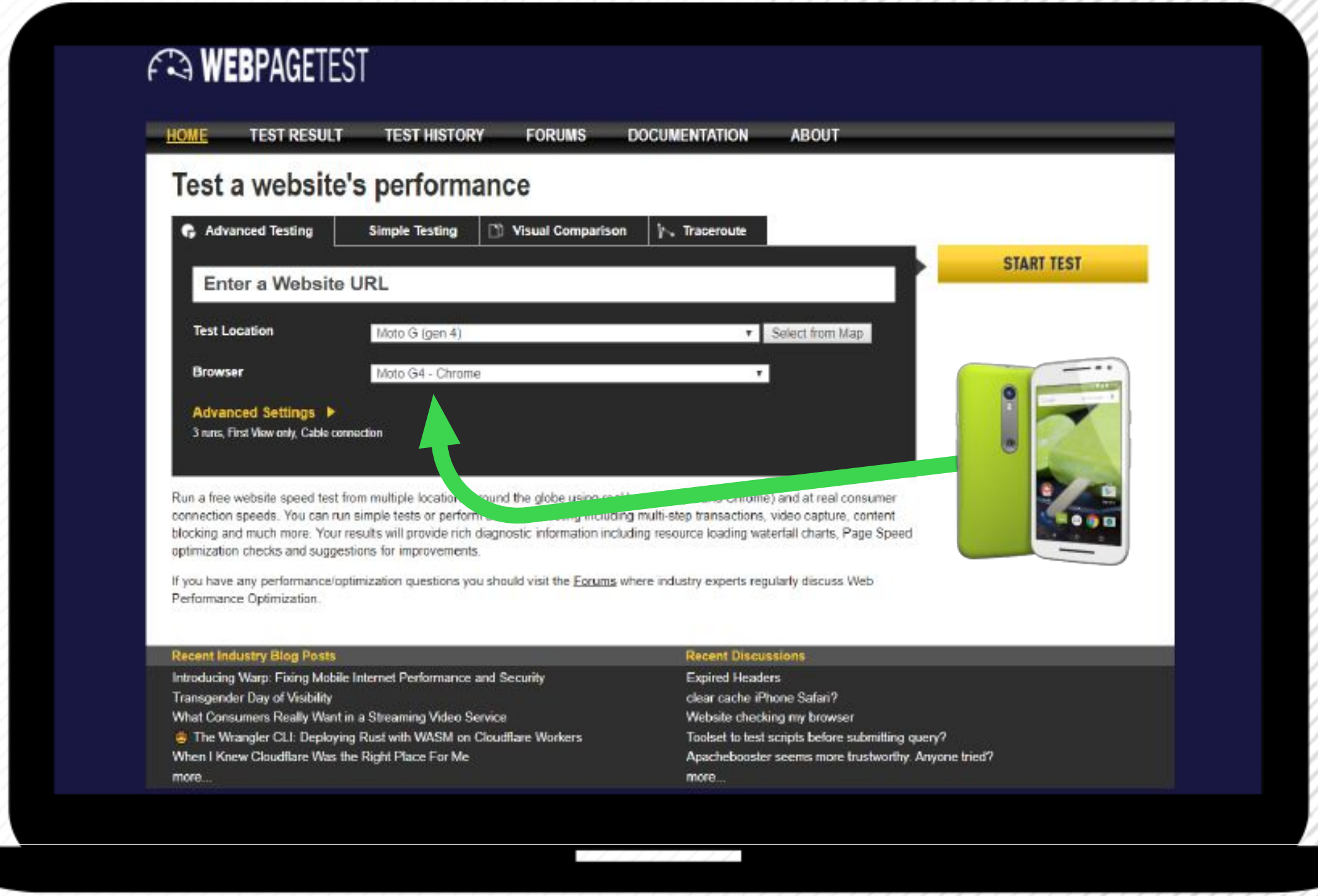
Moto G5 Plus

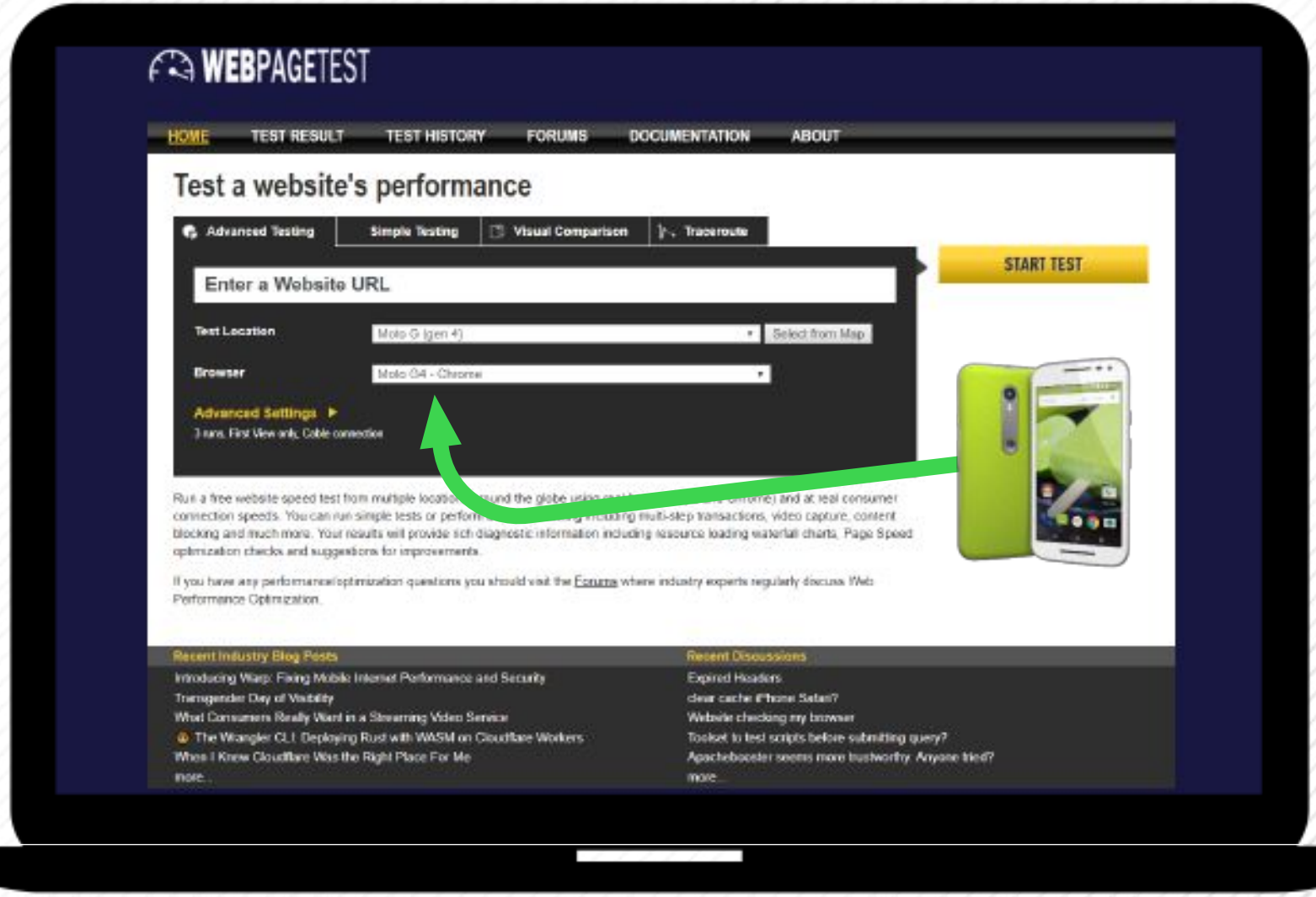
4112
Multi-Core Score

iPhone 6s

3918
Multi-Core Score

Most dev teams benchmark their web performance against **Moto G4**


WEBPAGETEST
HOME
TEST RESULT
TEST HISTORY
FORUMS
DOCUMENTATION
ABOUT
Test a website's performance
Advanced Testing
Simple Testing
Visual Comparison
Traceroute
START TEST
Enter a Website URL
Test Location
Moto G (gen 4)
Select from Map
Browser
Moto G4 - Chrome
Advanced Settings
3 runs, First View only, Cable connection
Run a free website speed test from multiple locations around the globe using real
connection speeds. You can run simple tests or perform
blocking and much more. Your results will provide rich diagnostic information including resource loading waterfall charts, Page Speed
optimization checks and suggestions for improvements.
If you have any performance/optimization questions you should visit the Forums where industry experts regularly discuss Web
Performance Optimization.
Recent Industry Blog Posts
Introducing Warp: Fixing Mobile Internet Performance and Security
Transgender Day of Visibility
What Consumers Really Want in a Streaming Video Service
The Wrangler CLI: Deploying Rust with WASM on Cloudflare Workers
When I Knew Cloudflare Was the Right Place For Me
more...
Recent Discussions
Expired Headers
clear cache iPhone Safari?
Website checking my browser
Toolset to test scripts before submitting query?
Apachebooster seems more trustworthy. Anyone tried?
more...


WEBPAGETEST
HOME
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ABOUT
Test a website's performance
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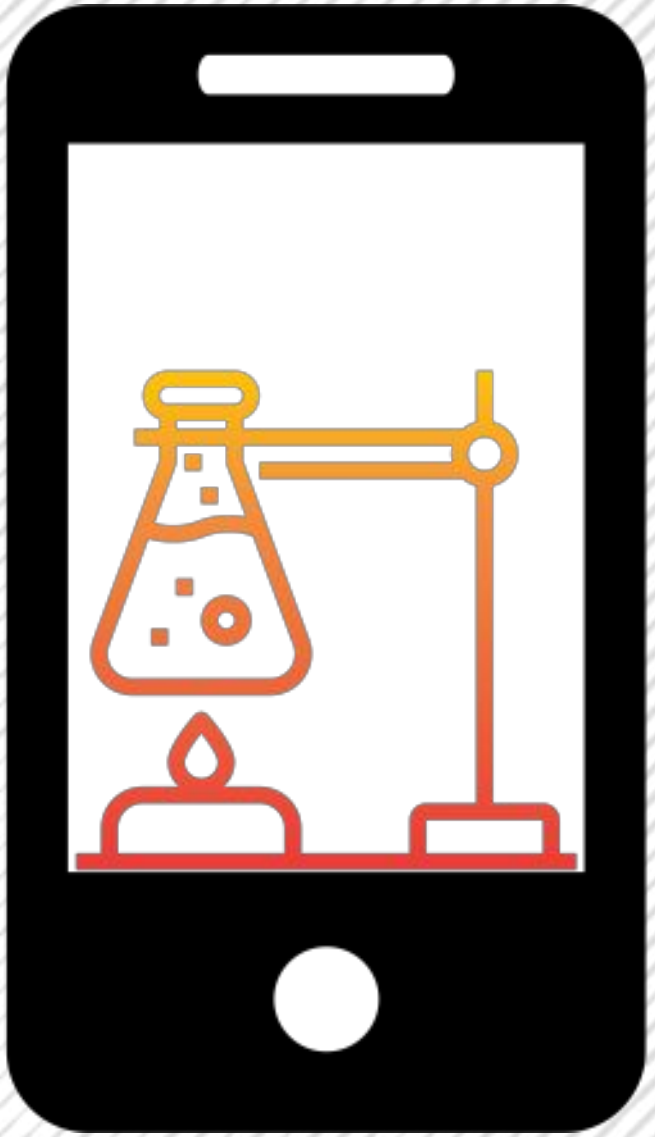
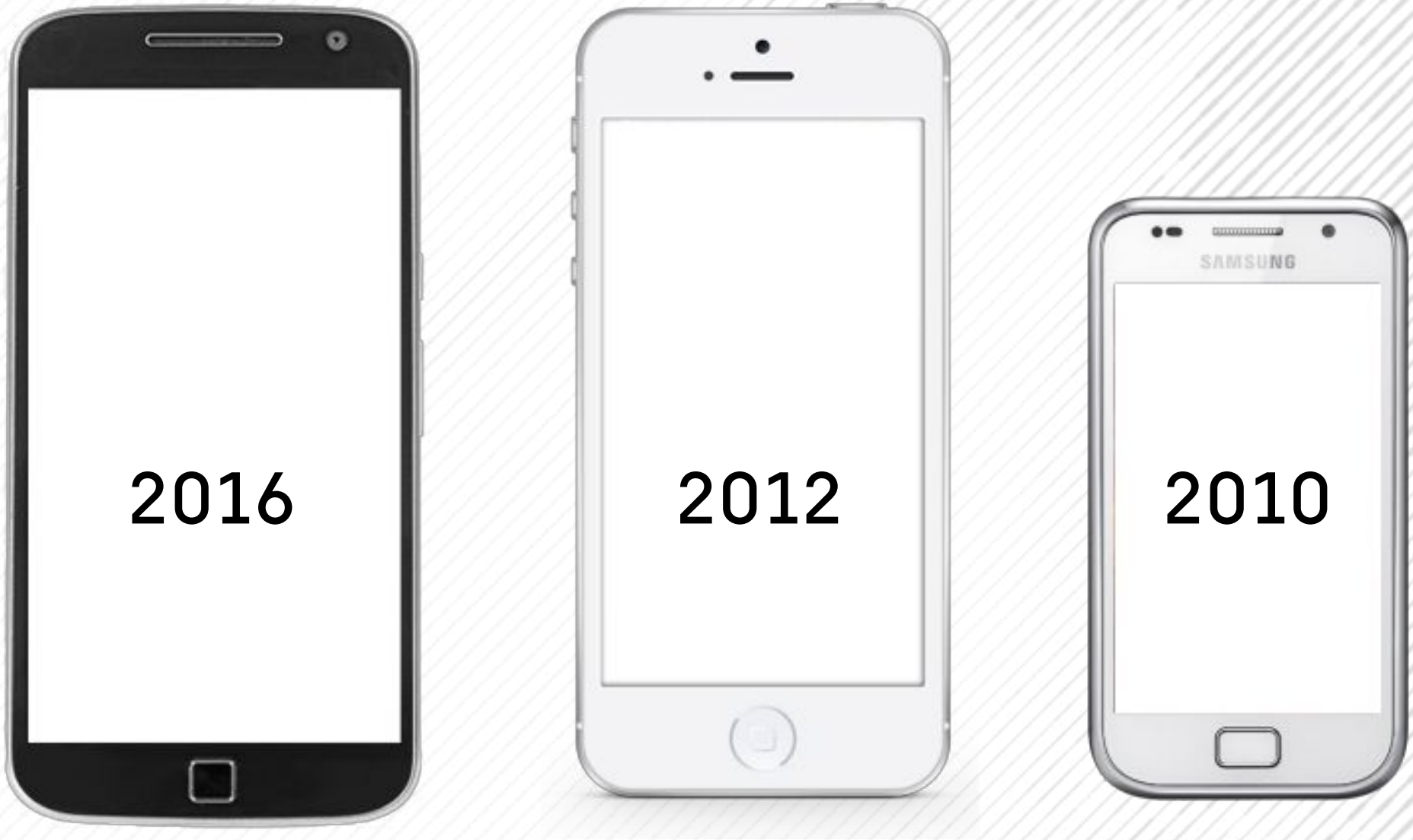
more...
Recent Discussions
Expired Headers
clear cache iPhone Safari?
Website checking my browser
Toolset to test scripts before submitting query?
Apachebooster seems more trustworthy. Anyone tried?
more...



2016
2012
SAMSUNG
2010

We don't have Amazon in Poland*

*do you still remember those good old times? :D

Finding Moto G4 wasn't easy.

Used Moto G4
on OLX for 100 EUR

Nobody is gonna buy this lame phone. I'm gonna pay 30 Euro.

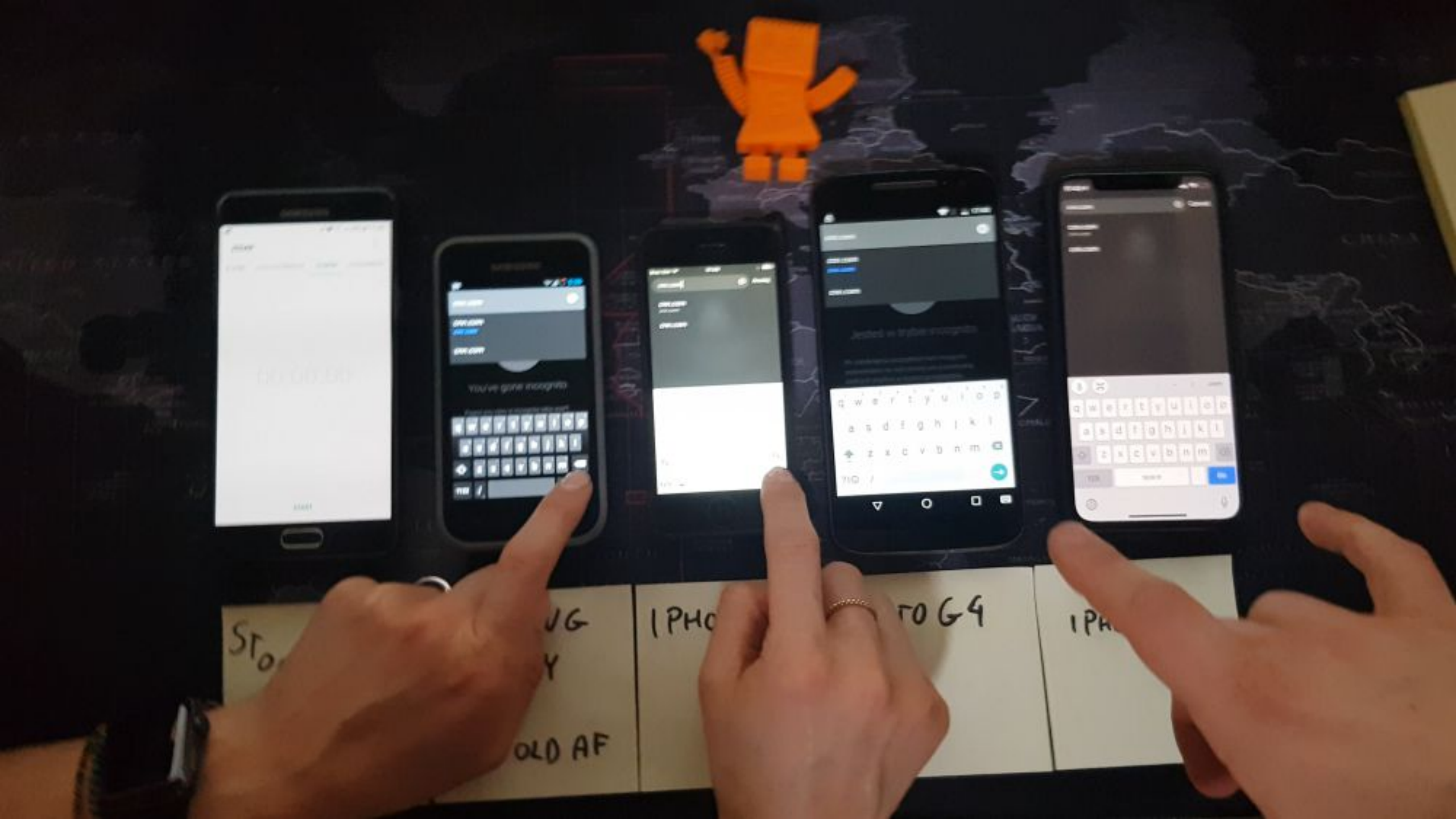
Yeah... I guess you are right...

Used Moto G4 on OLX for **100** EUR

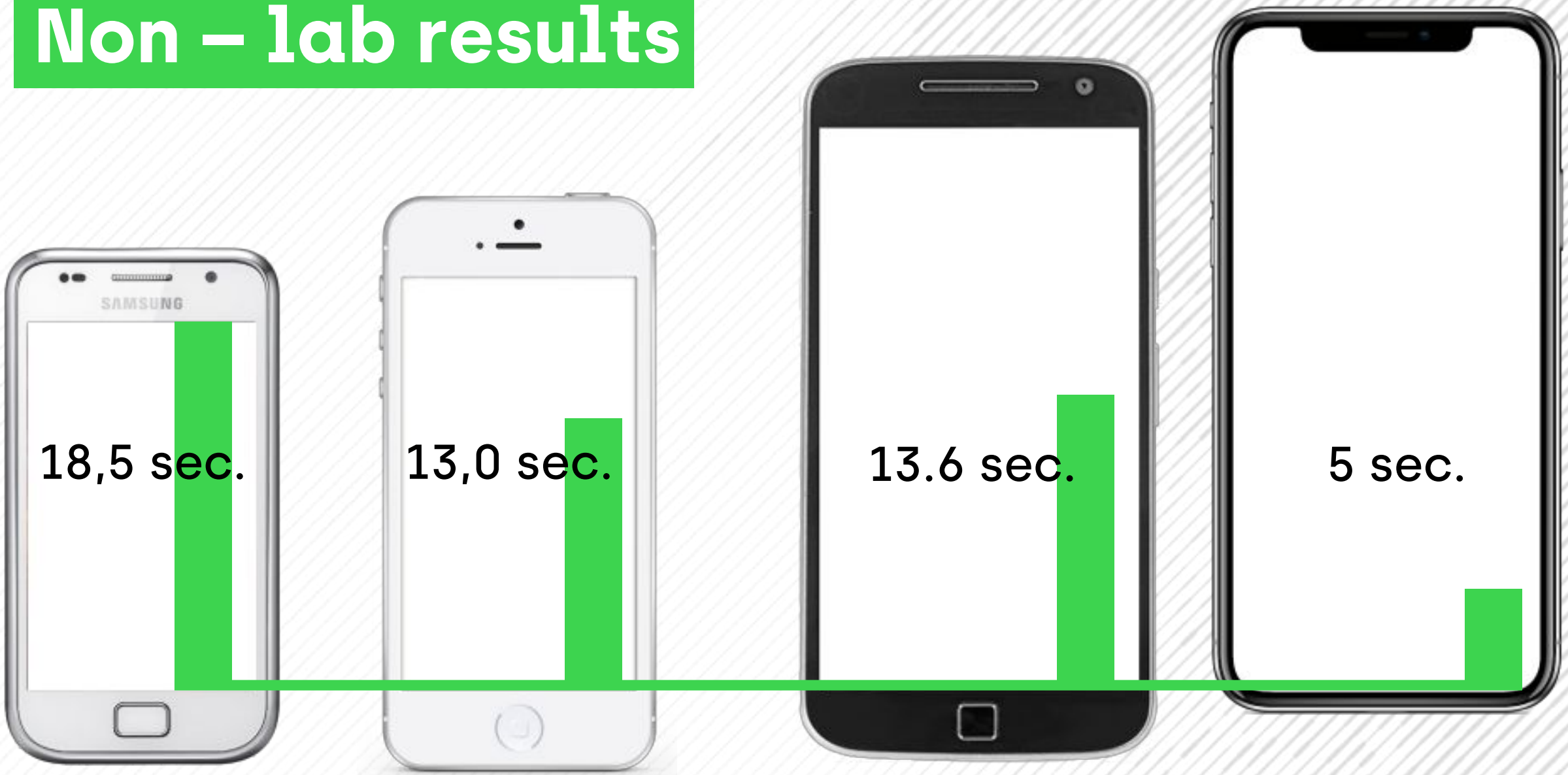
Nobody is gonna buy this lame phone. I'm gonna pay 30 Euro.

Yeah... I guess you are right...

Used Moto G4 on OLX for 35 EUR


You've gone incognito
OLD AF

Non – lab results



Samsung Galaxy S

iPhone 5

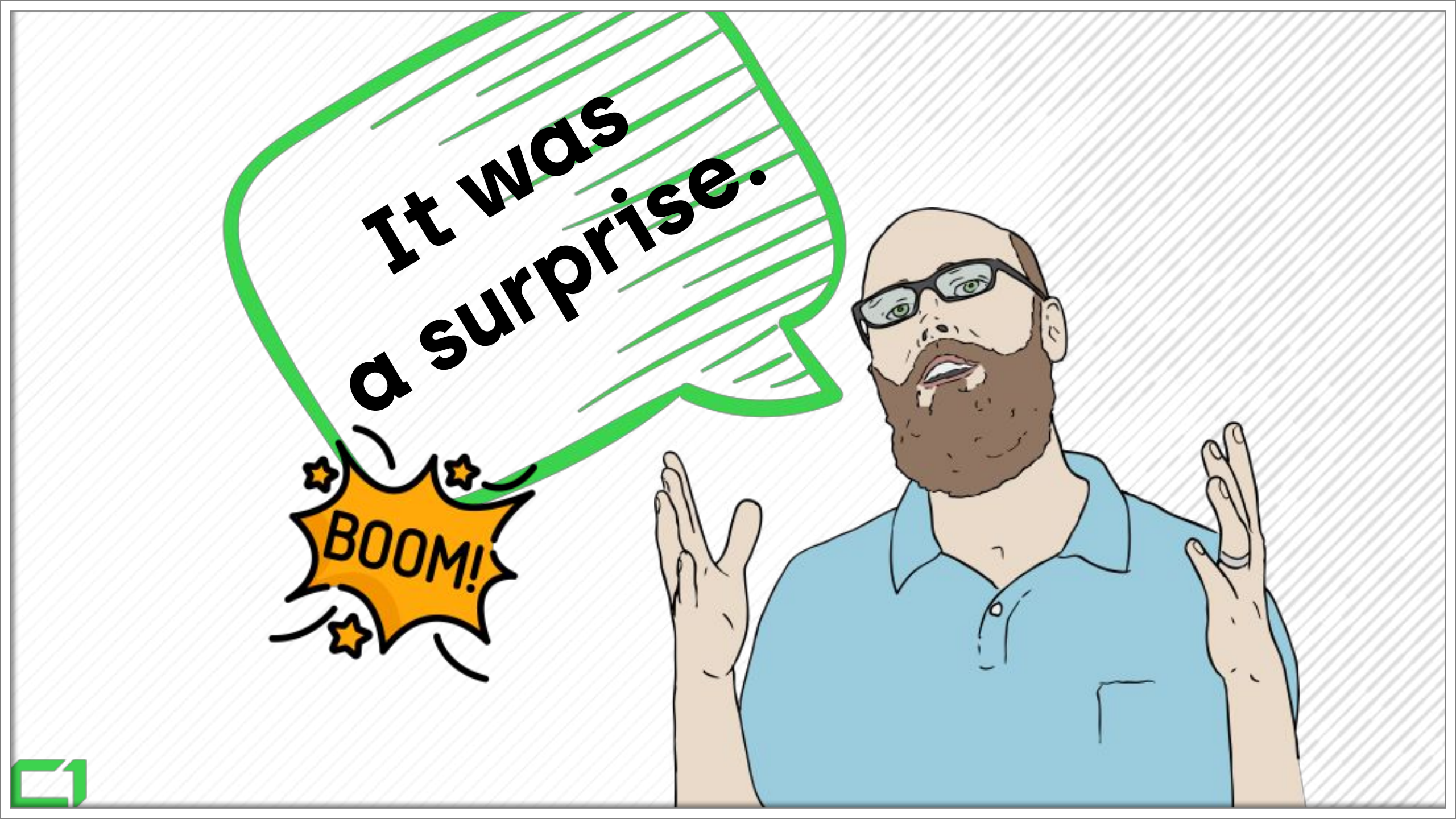
Moto G4

iPhone X

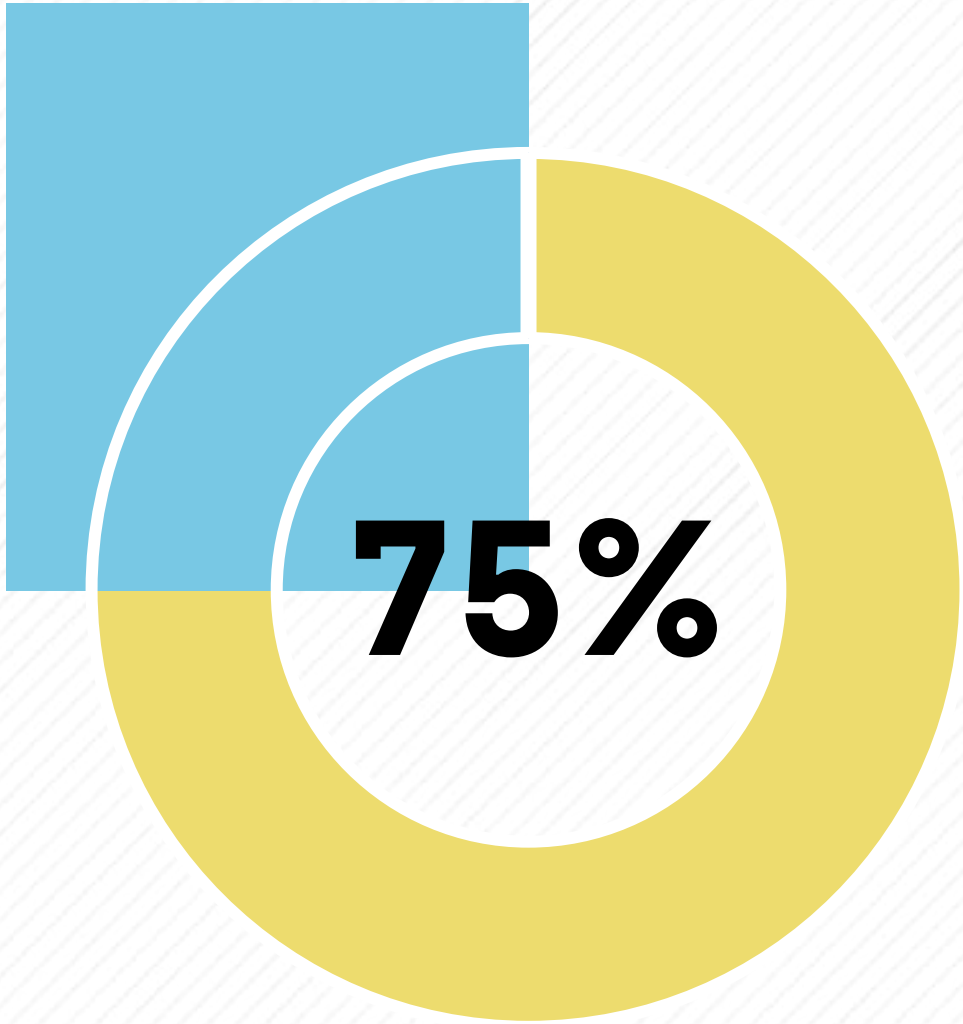
What is the right device to optimize for then?

Das Experiment

- ☑ Crux data
- ☑ Google Analytics
- ☑ Proper setup (e.g. specific iPhone models)
- ☑ Low / mid market in Germany
- ☑ Data from 6-9 months ago


It was a surprise.
BOOM!

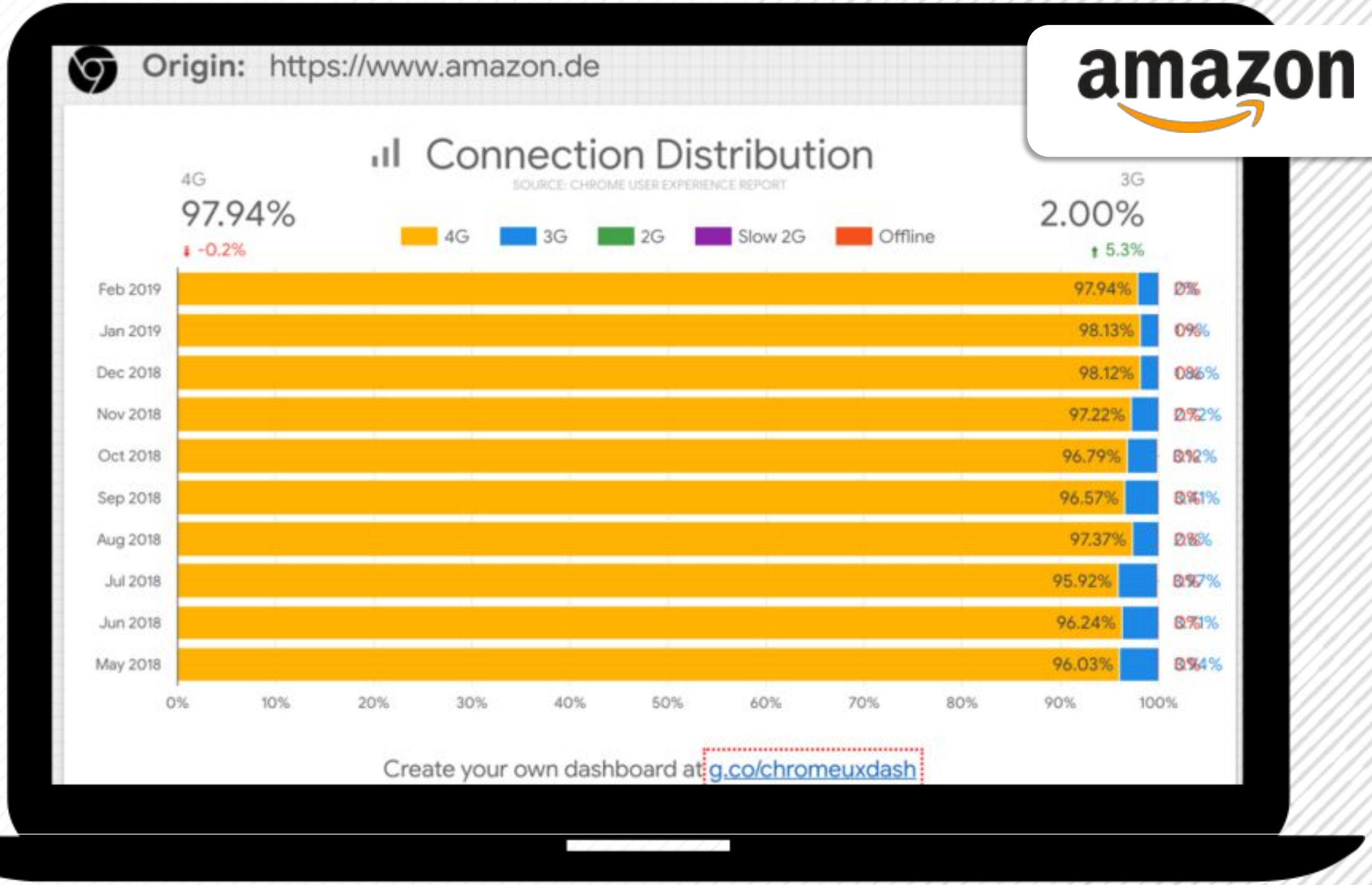
Internet connections – global statistics

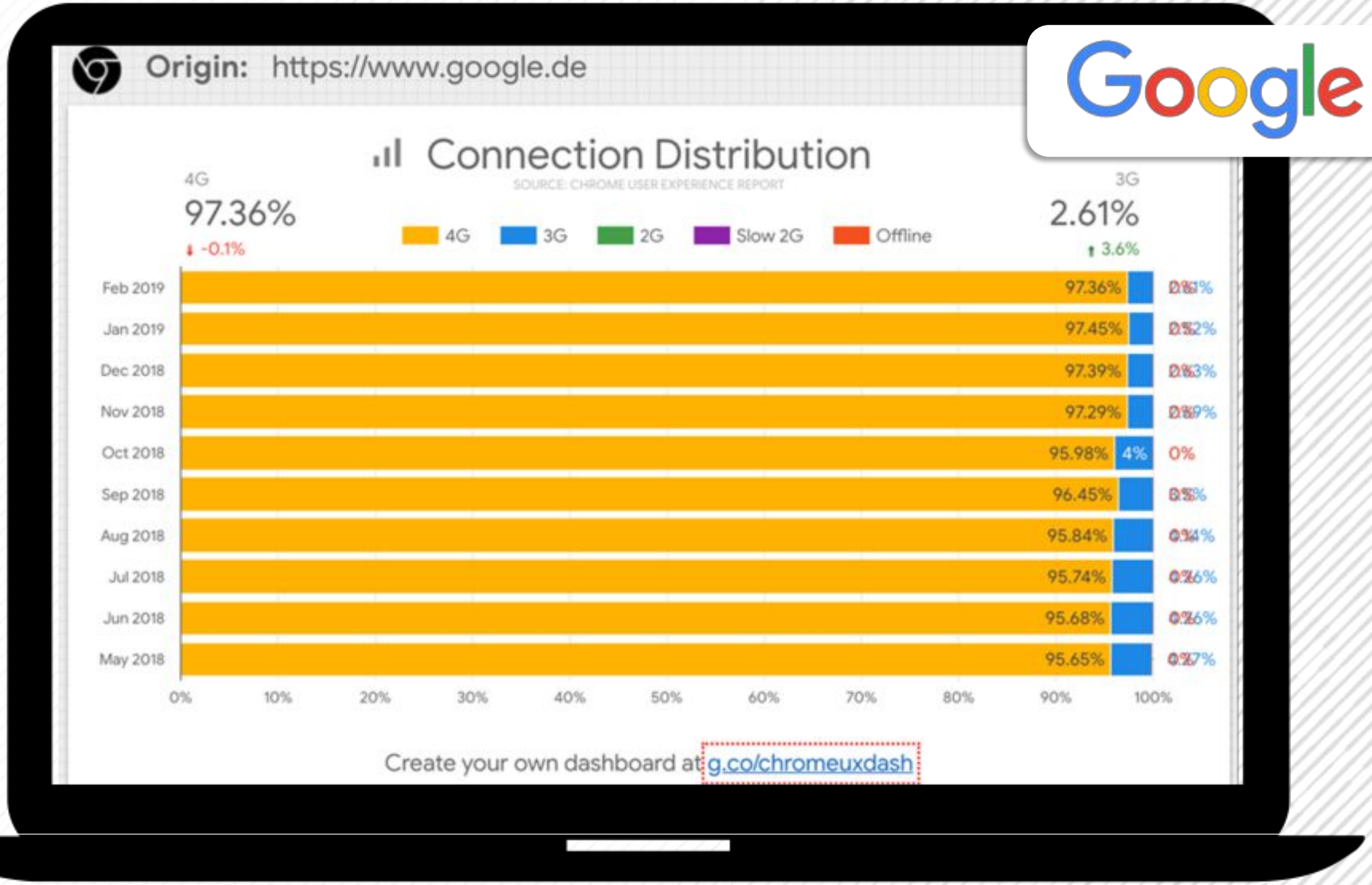


of mobile connections occur over 2G or 3G

*not in Germany

98% 4G


Origin: https://www.amazon.de
amazon
Connection Distribution
SOURCE: CHROME USER EXPERIENCE REPORT
4G
97.94%
-0.2%
3G
2.00%
5.3%
4G
3G
2G
Slow 2G
Offline
Feb 2019
Jan 2019
Dec 2018
Nov 2018
Oct 2018
Sep 2018
Aug 2018
Jul 2018
Jun 2018
May 2018
97.94%
98.13%
98.12%
97.22%
96.79%
96.57%
97.37%
95.92%
96.24%
96.03%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Create your own dashboard at g.co/chromeuxdash


Origin: https://www.google.de
Google
Connection Distribution
SOURCE: CHROME USER EXPERIENCE REPORT
4G
97.36%
-0.1%
3G
2.61%
3.6%
4G
3G
2G
Slow 2G
Offline
Feb 2019
Jan 2019
Dec 2018
Nov 2018
Oct 2018
Sep 2018
Aug 2018
Jul 2018
Jun 2018
May 2018
97.36%
97.45%
97.39%
97.29%
95.98%
4%
0%
96.45%
95.84%
95.74%
95.68%
95.65%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Create your own dashboard at g.co/chromeuxdash

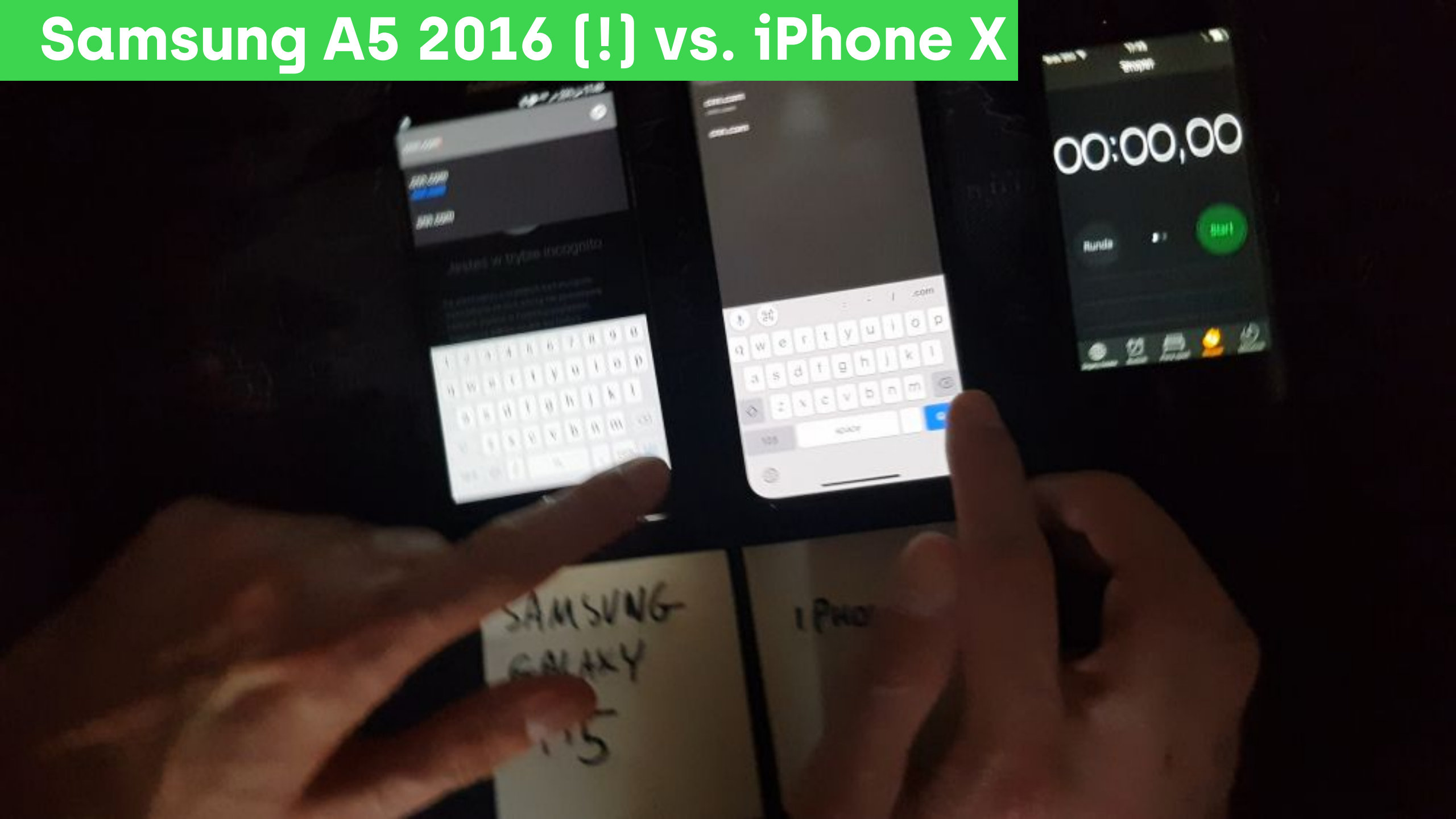
- [x] Real data
- [x] Low & mid market websites
- [x] 2019

65 %

1.	Apple iPhone	**909,382**	(38.43%)
2.	Apple iPad	**143,279**	(6.05%)
3.	Samsung SM-G950F Galaxy S8	**110,898**	(4.69%)
4.	Samsung SM-G930F Galaxy S7	**98,113**	(4.15%)
5.	(not set)	**73,124**	(3.09%)
6.	Samsung SM-G960F Galaxy S9	**60,884**	(2.57%)
7.	Samsung SM-G935F Galaxy S7 Edge	**40,496**	(1.71%)
8.	Samsung SM-G965F Galaxy S9+	**37,112**	(1.57%)
9.	Samsung SM-A520F Galaxy A5 (2017)	**36,635**	(1.55%)
10.	Samsung SM-G920F Galaxy S6	**30,579**	(1.29%)

Weakest device:
Samsung A5 (2017)

Samsung A5 2016 (!) vs. iPhone X



Samsung A5 (2016)

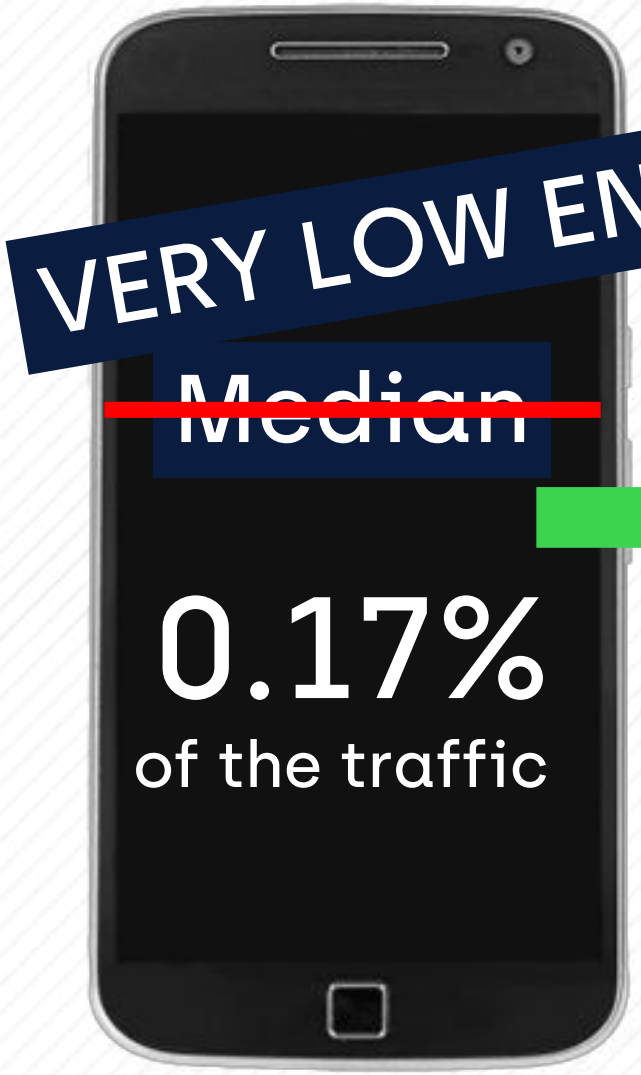
Let's go even lower...

Weakest device: Samsung J3 (2017)

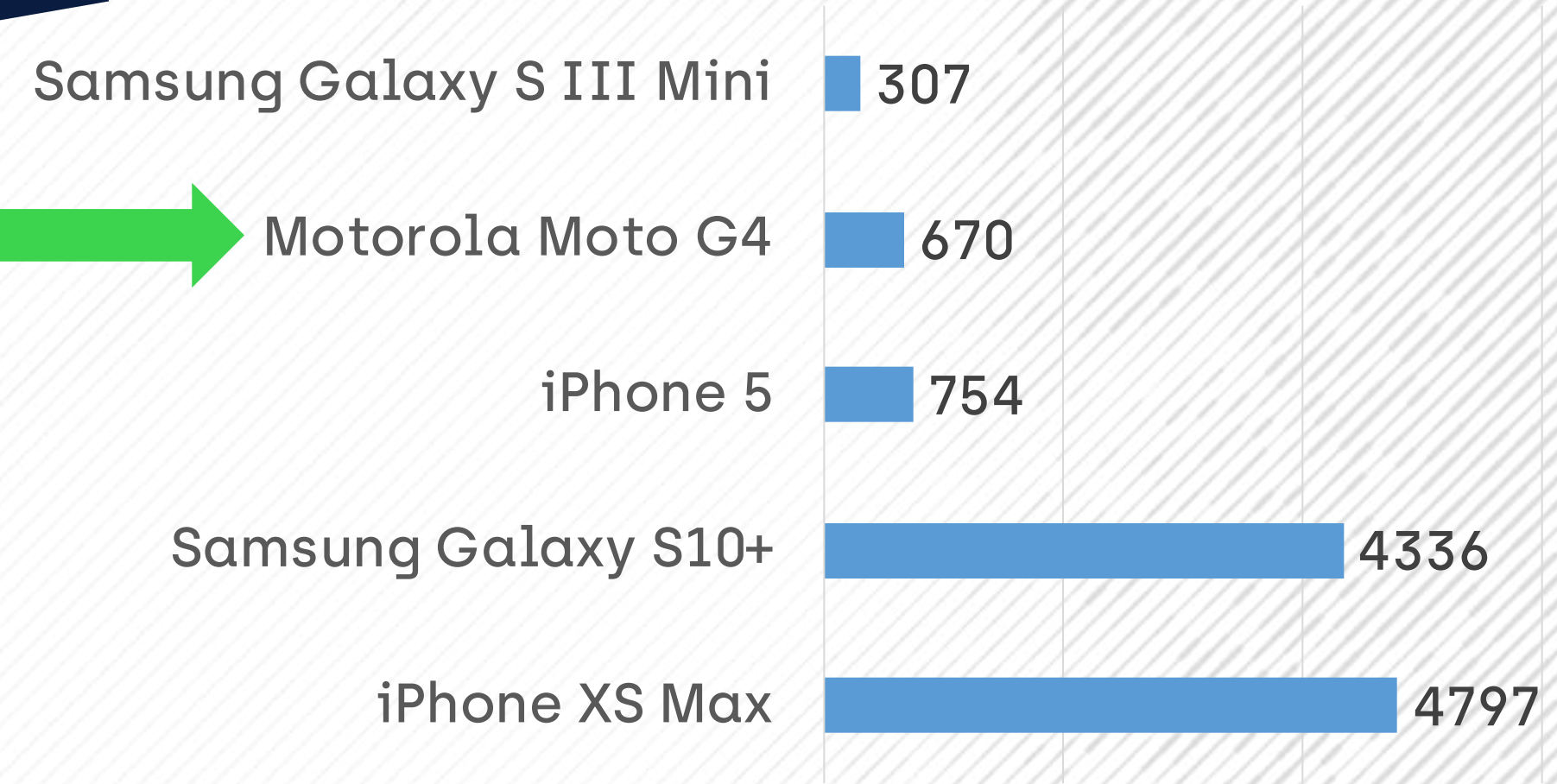
80 %

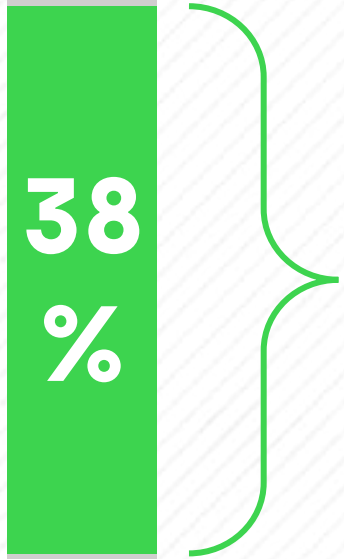
Samsung J3 (2017)

Samsung J3 is a German equivalent of Moto G4.



Single core performance score:





iPhones

7 or higher

Model	% of all iPhones
iPhone 5	4.30%
iPhone 6	34.27%
iPhone 7	25.28%
iPhone 8	19.14%
iPhone X	11.66%
iPhone XS	3.20%

38%

iPhones

96%

6 or higher

Model	% of all iPhones
iPhone 5	4.30%
iPhone 6	34.27%
iPhone 7	25.28%
iPhone 8	19.14%
iPhone X	11.66%
iPhone XS	3.20%

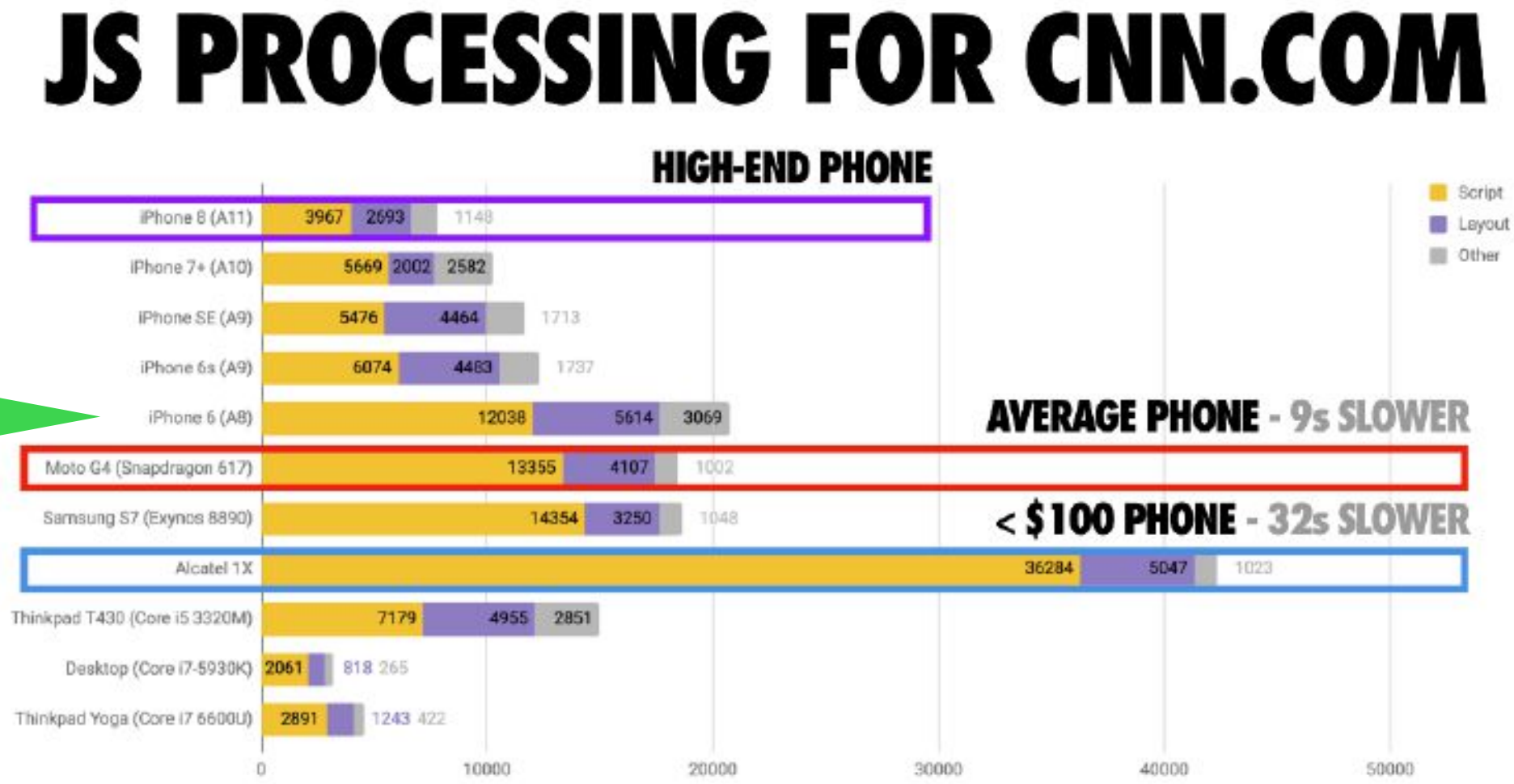
How do I know which iPhones are the most popular?

		2,365,910 % of Total: 100.00% (2,365,910)
1.	Apple iPhone ?	**909,382** (38.43%)
2.	Apple iPad	**143,279** (6.05%)
3.	Samsung SM-G950F Galaxy S8	**110,898** (4.69%)
4.	Samsung SM-G930F Galaxy S7	**98,113** (4.15%)

Custom dimensions in Google Analytics to the rescue!

We start here

[iPhone 6]

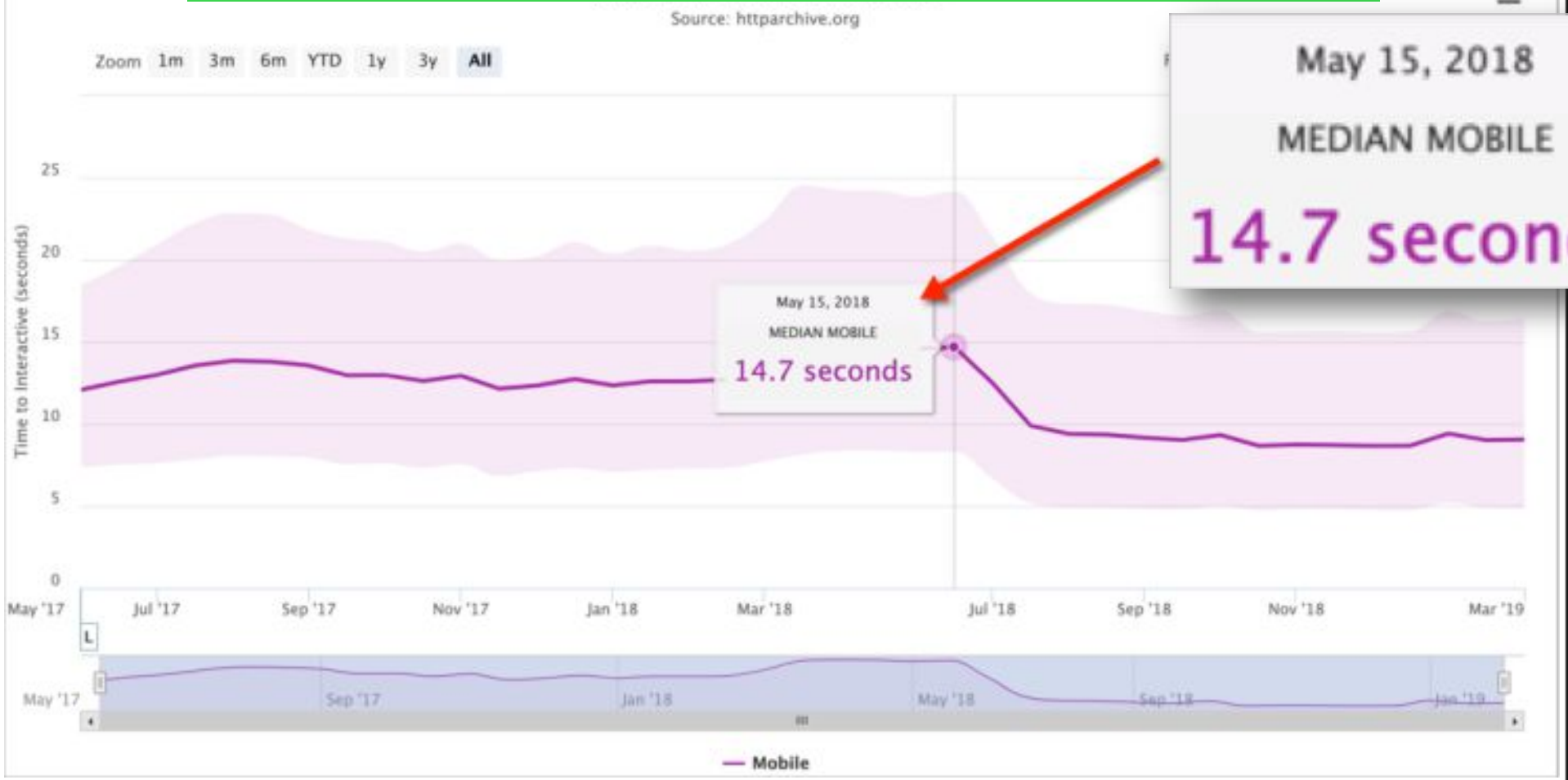


Model	% of all Samsung phones
Samsung S9	13.96%
Samsung S8	19.5%
Samsung S7	19.73%
Samsung S6	8.33%
Samsung A5	7.76%
Other models	~25%

Samsungs

The ultimate proof.

Time to interactive 2018



May 15, 2018
MEDIAN MOBILE
14.7 seconds

Time to interactive 2019

Who in the audience thinks it makes our job easier?

Web Performance rule #1

IT NEVER GETS EASIER WITH MORE JAVASCRIPT


7:11
amazon.de
amazon.de
amazon.de
amazon.de
19:11
28%
mediamarkt.de
mediamarkt.de
mediamarkt.de
mediamarkt.de
Amazon.de
MediaMarkt.de
Moto G4
Samsung Note 8

Being able to ship more JavaScript makes web performance more complex...

… mobile performance is a ranking factor now.

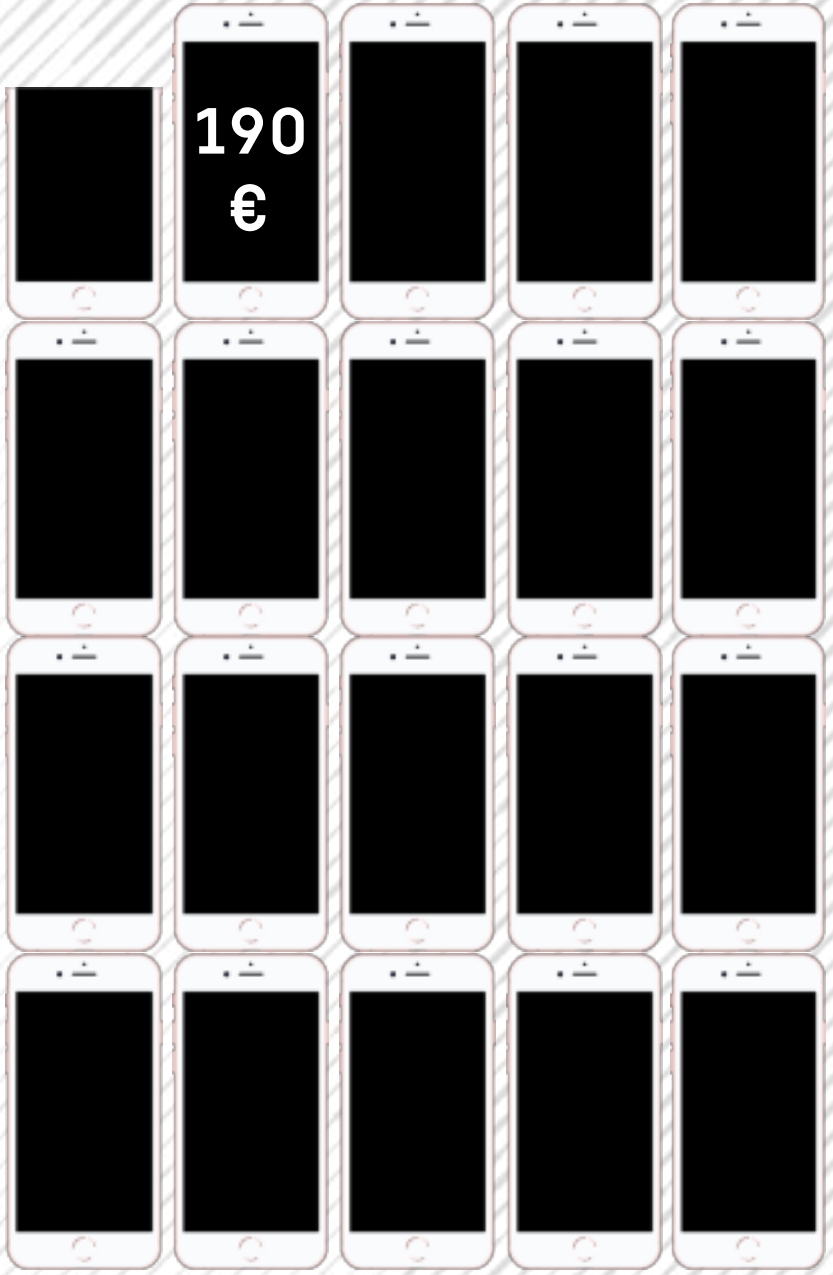
Your benchmarks:

Amazon.de
Otto.de
Zalando.de

You need to know your market

- Germans are very particular
- 98% 4G
- Economically wealthy
- Average salary
  vs.
  cost of iPhone 6

€3,771



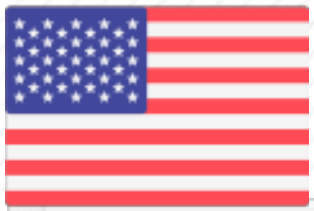
Actionable data

Get interactive within 5 seconds or less on **Samsung A5** or **iPhone 6**.

Catch up to your competitors.

Use JavaScript to keep your users.

Design your stack based on real data

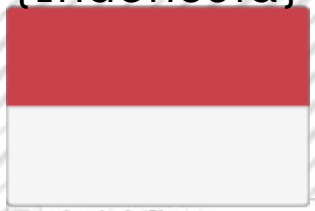


1.	Apple iPhone	41,692,770 (56.96%)
2.	Apple iPad	7,342,233 (10.03%)
3.	Samsung SM-G950U Galaxy S8	1,205,968 (1.65%)
4.	Samsung SM-G960U Galaxy S9	1,021,257 (1.40%)
5.	Samsung SM-N950U Galaxy Note8	907,603 (1.24%)
6.	Samsung SM-G965U Galaxy S9+	906,078 (1.24%)
7.	Samsung SM-G955U Galaxy S8+	897,522 (1.23%)
8.	Apple iPhone 8 Plus	873,589 (1.19%)
9.	(not set)	813,024 (1.11%)
10.	Microsoft Windows RT Tablet	760,239 (1.04%)

1.	Apple iPhone	5,048,963 (33.04%)
2.	Apple iPad	1,619,636 (10.60%)
3.	(not set)	588,368 (3.85%)
4.	Samsung SM-G930F Galaxy S7	544,135 (3.56%)
5.	Samsung SM-G920F Galaxy S6	408,895 (2.68%)
6.	Samsung SM-G900F Galaxy S5	389,141 (2.55%)
7.	Samsung SM-G950F Galaxy S8	325,084 (2.13%)
8.	Samsung SM-G935F Galaxy S7 Edge	323,179 (2.11%)
9.	Samsung SM-G925F Galaxy S6 Edge	244,307 (1.60%)
10.	Huawei ALE-L21 P8 Lite	117,956 (0.77%)

Oppo A37f

(Indonesia)



1.	Apple iPhone	638,426 (10.94%)
2.	(not set)	220,548 (3.78%)
3.	Samsung SM-G532G Galaxy Grand Prime+	201,558 (3.45%)
4.	OPPO A37f	180,612 (3.09%)
5.	OPPO CPH1803 A3s	157,207 (2.69%)
6.	Xiaomi Redmi Note 4	119,170 (2.04%)
7.	Xiaomi Redmi 5A	115,060 (1.97%)
8.	Xiaomi Redmi 4A	113,480 (1.94%)
9.	Xiaomi Redmi 4X	104,604 (1.79%)
10.	OPPO A1601 F1s	102,990 (1.76%)

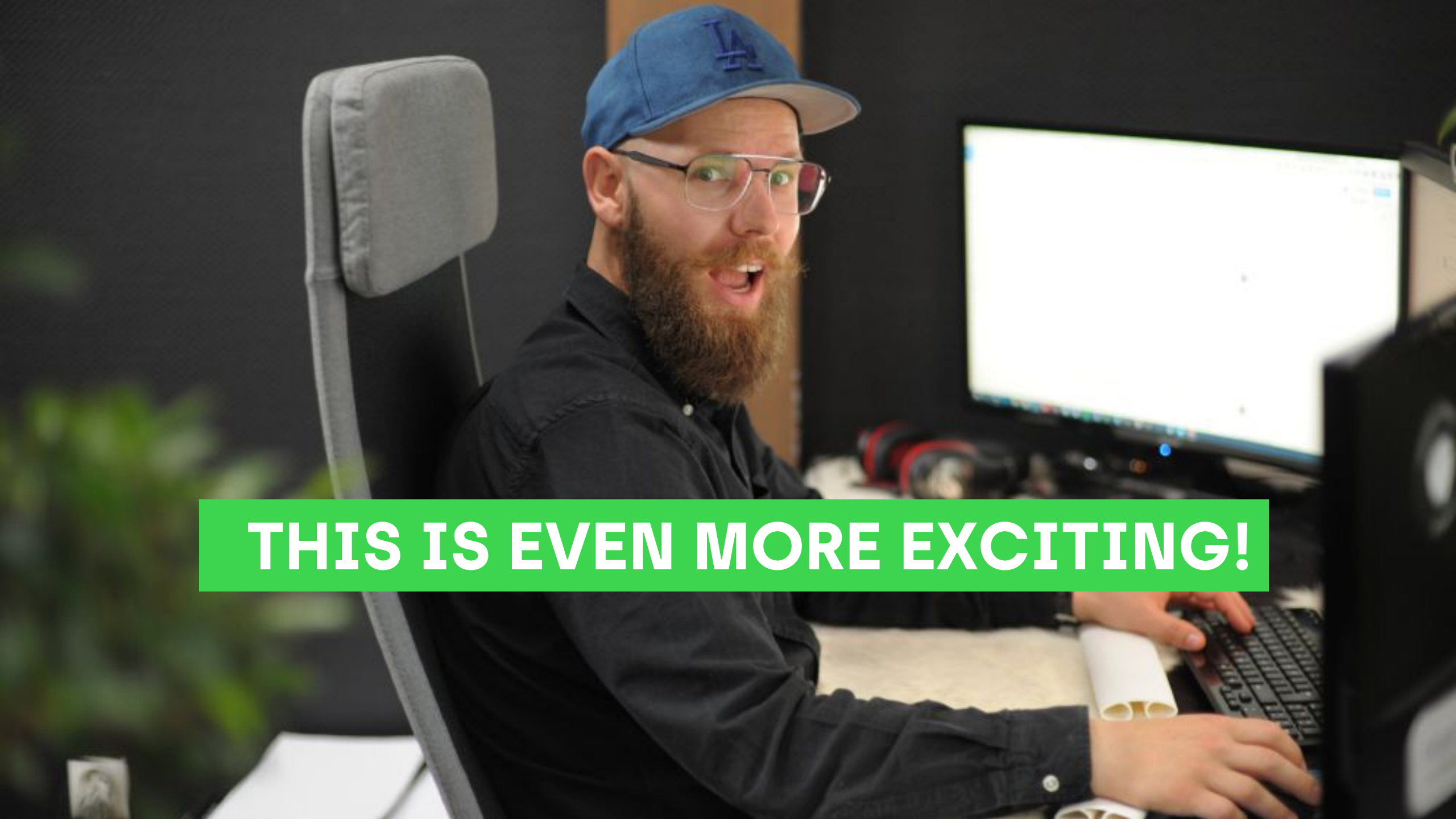
More JS **Less JS**


How about the USA?

Das Gleiche Experiment

- ☑ USA
- ☑ Few of the top eCommerce stores
- ☑ Mid-market
- ☑ Traffic of XX M sessions monthly

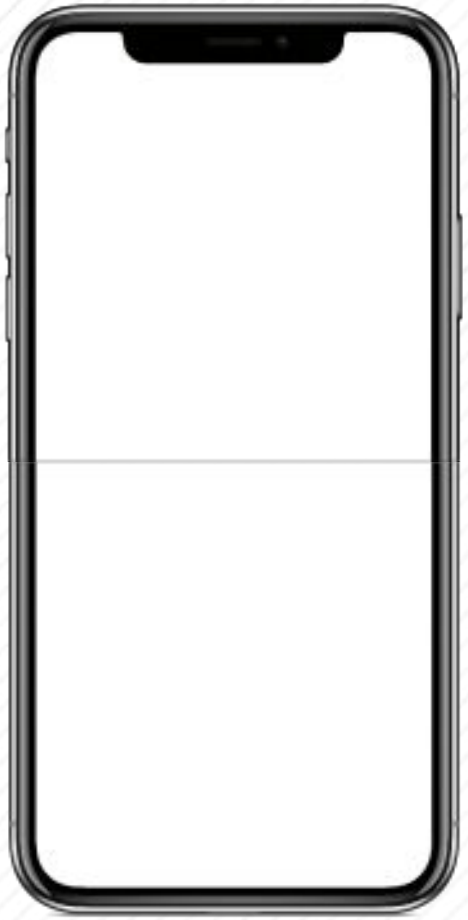
1.	Apple iPhone	**49,890,452**	(57.03%)
2.	Apple iPad	**8,648,108**	(9.89%)
3.	Samsung SM-G950U Galaxy S8	**1,414,242**	(1.62%)
4.	Samsung SM-G960U Galaxy S9	**1,219,643**	(1.39%)
5.	Apple iPhone 8 Plus	**1,076,630**	(1.23%)
6.	Samsung SM-G965U Galaxy S9+	**1,076,127**	(1.23%)
7.	Samsung SM-N950U Galaxy Note8	**1,064,629**	(1.22%)
8.	Samsung SM-G955U Galaxy S8+	**1,054,951**	(1.21%)
9.	(not set)	**957,249**	(1.09%)
10.	Apple iPhone 7 Plus	**921,901**	(1.05%)
11.	Microsoft Windows RT Tablet	**915,677**	(1.05%)
12.	Apple iPhone X	**829,483**	(0.95%)
13.	Apple iPhone 7	**764,442**	(0.87%)
14.	Samsung SM-N960U Galaxy Note9	**739,170**	(0.84%)
15.	Apple iPhone 8	**544,219**	(0.62%)
16.	Apple iPhone 6s	**467,158**	(0.53%)
17.	Samsung SM-G930V Galaxy S7	**453,235**	(0.52%)
18.	Apple iPhone XS Max	**436,267**	(0.50%)
19.	Apple iPhone XR	**356,734**	(0.41%)
20.	Apple iPhone 6s Plus	**325,249**	(0.37%)


THIS IS EVEN MORE EXCITING!


70% of all the mobile devices are Apple's

Median iPhone

iPhone X

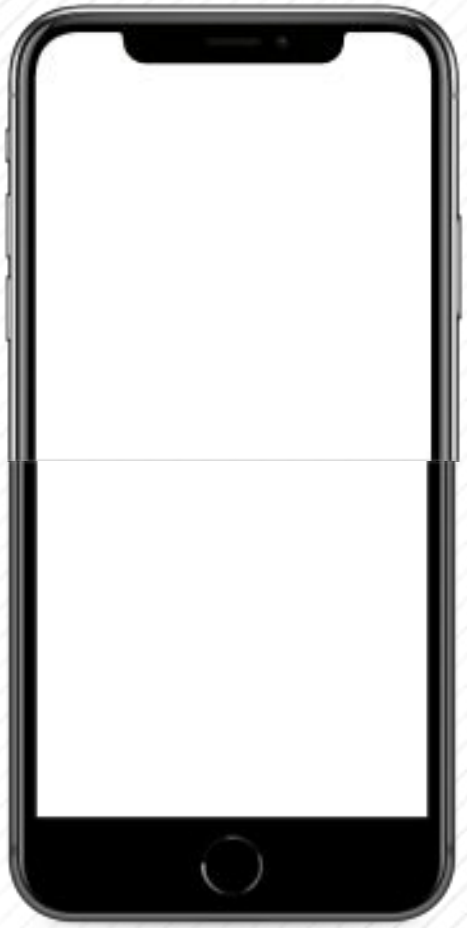


iPhone 8

Median iPhone

iPhone X

iPhone 9



iPhone 8

… so far…

Moto G4 isn't the median phone and it wasn't one since 2016

90%+ of mobile devices we saw in our experiments are more powerful than Moto G4

It all depends on your market

Medium Javascript

The Cost Of JavaScript In 2018

Addy Osmani Follow

Building interactive sites can involve sending JavaScript to your users. Often, too much of it. Have you been on a mobile page that looked like it had loaded only to tap on a link or tried to scroll and nothing happens?

Byte-for-byte, JavaScript is still the most expensive resource we send to mobile phones, because it can delay interactivity in large ways.

This is based on data from ~~2017~~ 2016

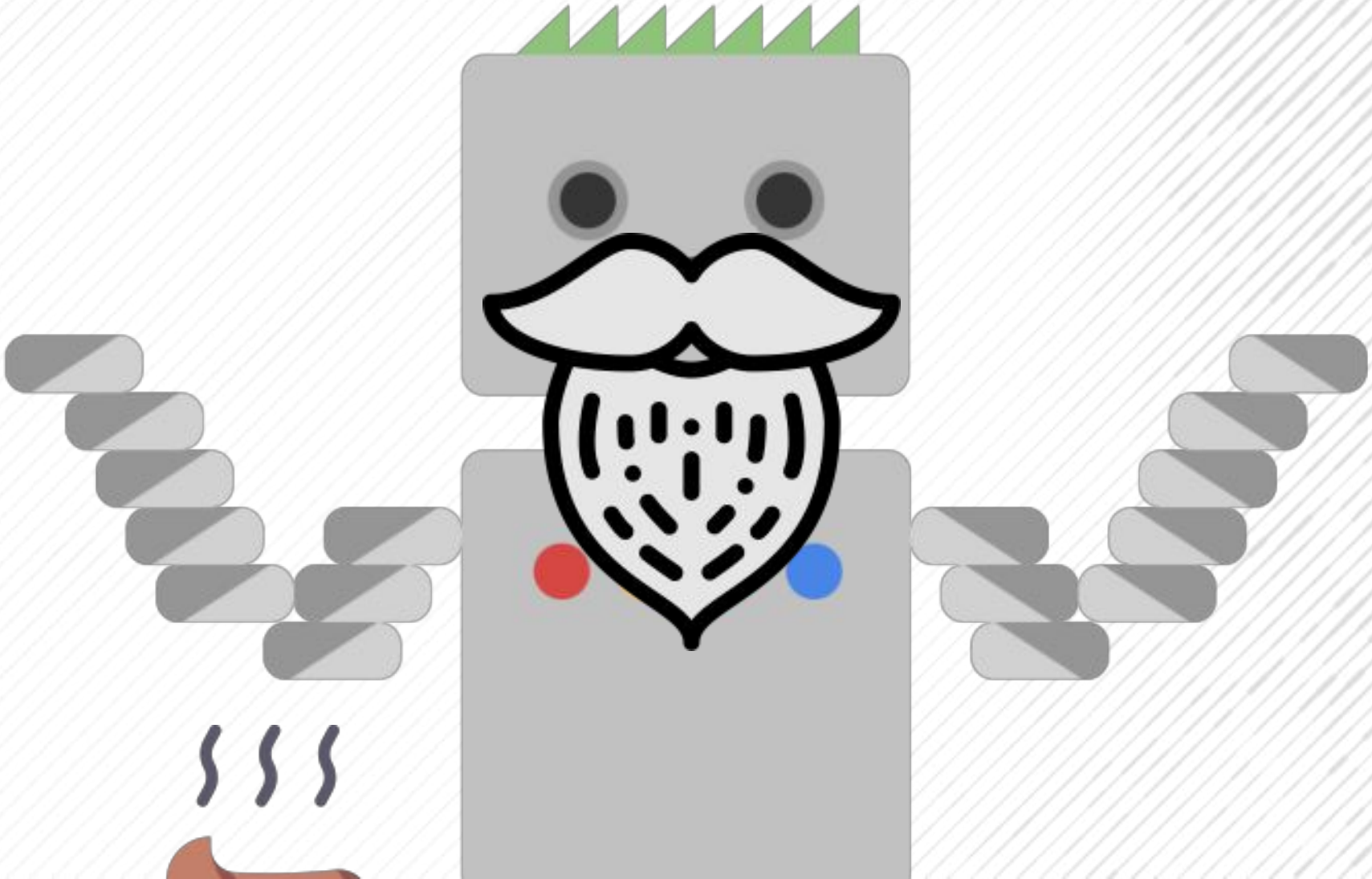
JavaScript processing times for CNN.com as measured by WebPageTest (src). A high-end phone (iPhone 8) processes script in ~4s. Compare to the ~10s an average phone (Moto G4) takes or the ~36s taken by a low-end 2016 phone (Alcatel 1X).

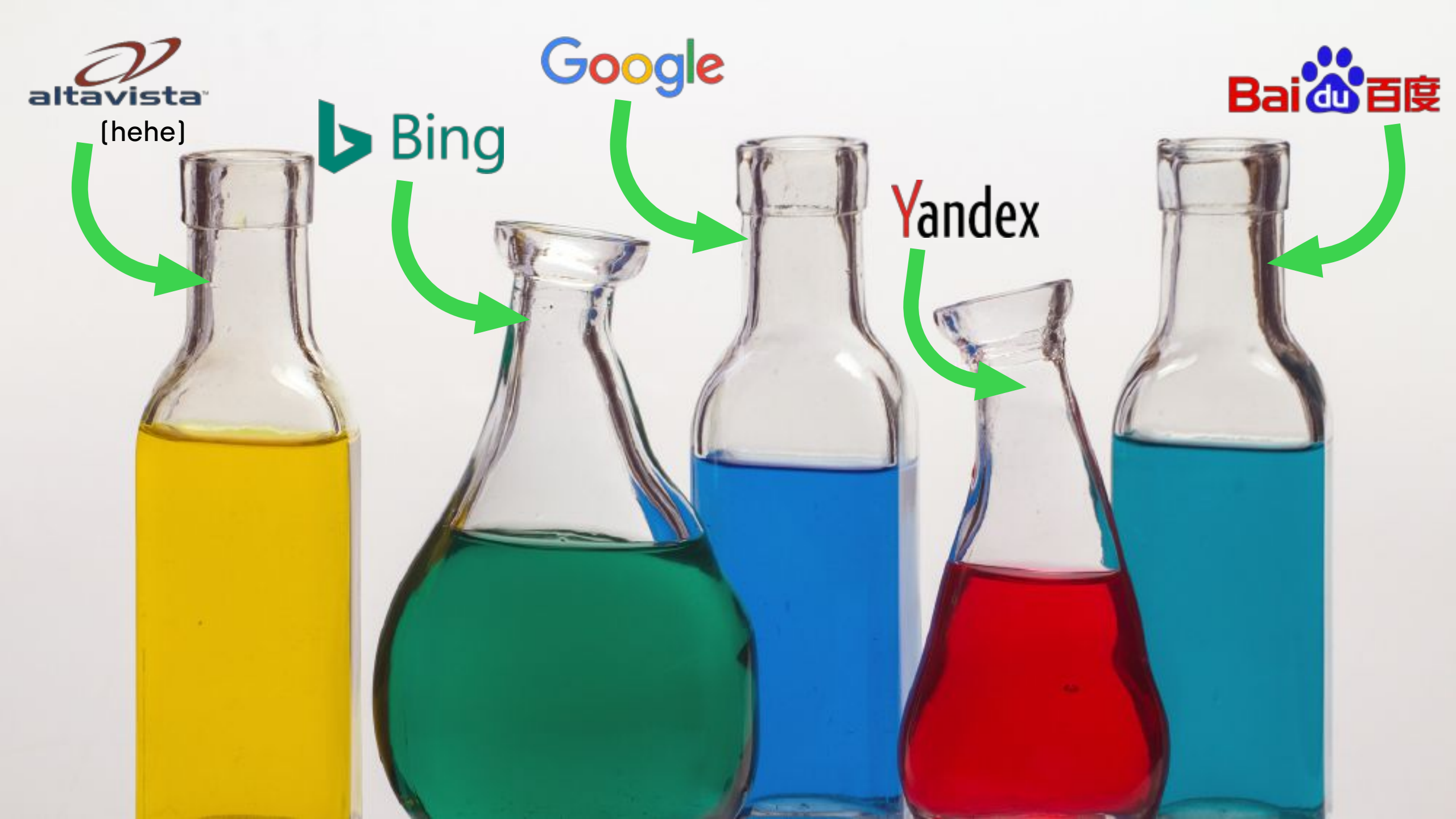
There is only 1 possible outcome


RELEASE THE
JAVASCRIPT!!!

Not so fast tho...

… we've got a party pooper




altavista
(hehe)
Bing
Google
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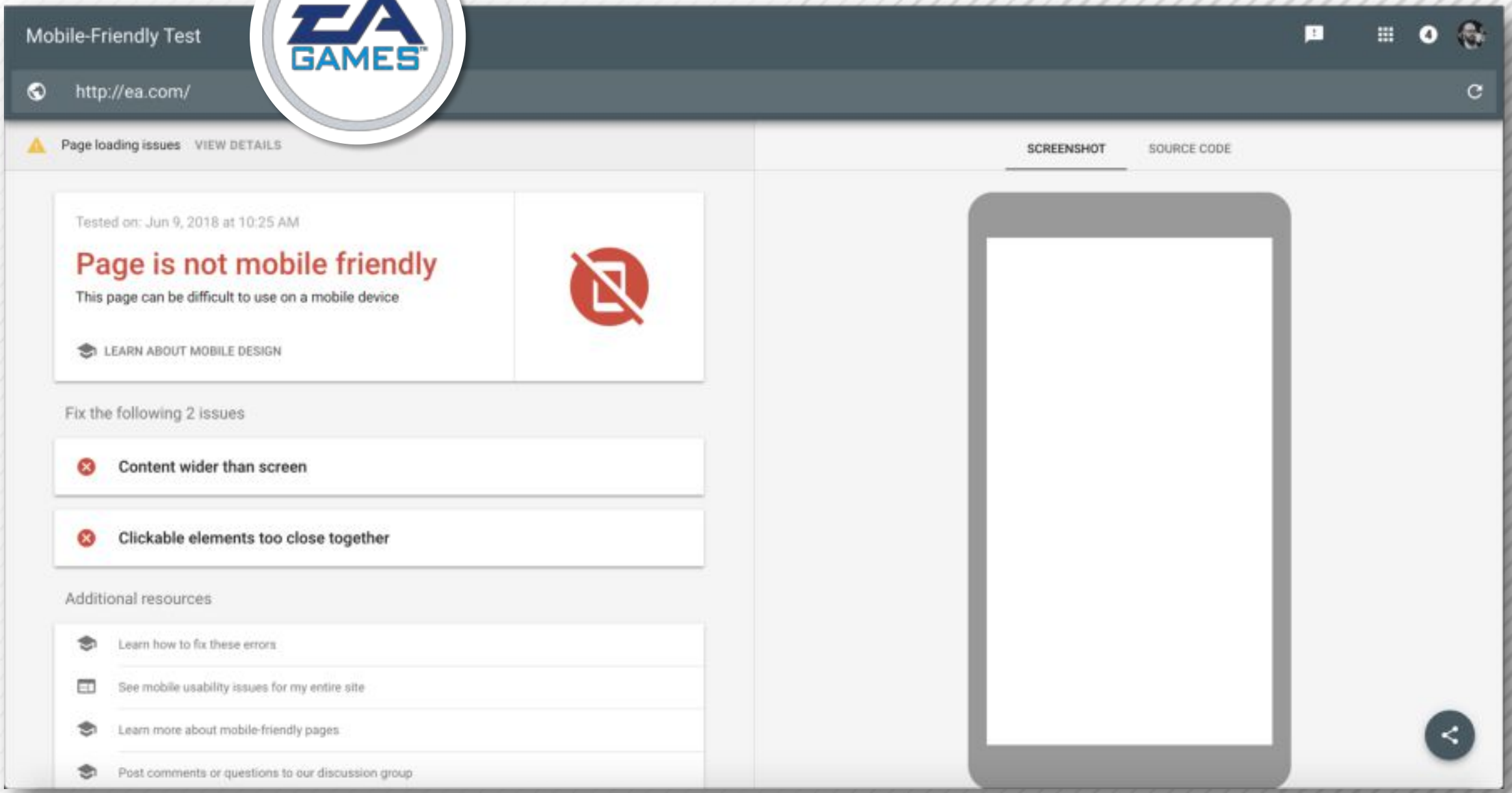
EA
GAMES™


Mobile-Friendly Test
http://ea.com/
Page loading issues
VIEW DETAILS
SCREENSHOT
SOURCE CODE
Tested on: Jun 9, 2018 at 10:25 AM
Page is not mobile friendly
This page can be difficult to use on a mobile device
LEARN ABOUT MOBILE DESIGN
Fix the following 2 issues
Content wider than screen
Clickable elements too close together
Additional resources
Learn how to fix these errors
See mobile usability issues for my entire site
Learn more about mobile-friendly pages
Post comments or questions to our discussion group

Cost?


Visibility
Weekly
Time span: 03/10/2014 - 03/10/2019 GO
Zoom: 1M 2M 6M 1Y 2Y 5Y
175,000
150,000
125,000
100,000
Visibility
03/09/2014
08/10/2014
01/18/2015
06/21/2015
12/13/2015
05/29/2016
11/20/2016
04/30/2017
10/17/2017
04/01/2018
09/09/2018
02/24/2019
Time
searchmetrics
ea.com (SEO Visibility)
ea.com (Paid Visibility)
Google Updates


AliExpress™

AliExpress

Mobile-Friendly Test

https://www.aliexpress.com/

Page loading issues VIEW DETAILS

SCREENSHOT SOURCE CODE

Tested on: Jun 9, 2018 at 10:28 AM

Page is mobile-friendly

This page is easy to use on a mobile device

SUBMIT TO GOOGLE

Additional resources

- Open site-wide mobile usability report
- Learn more about mobile-friendly pages
- Post comments or questions to our discussion group

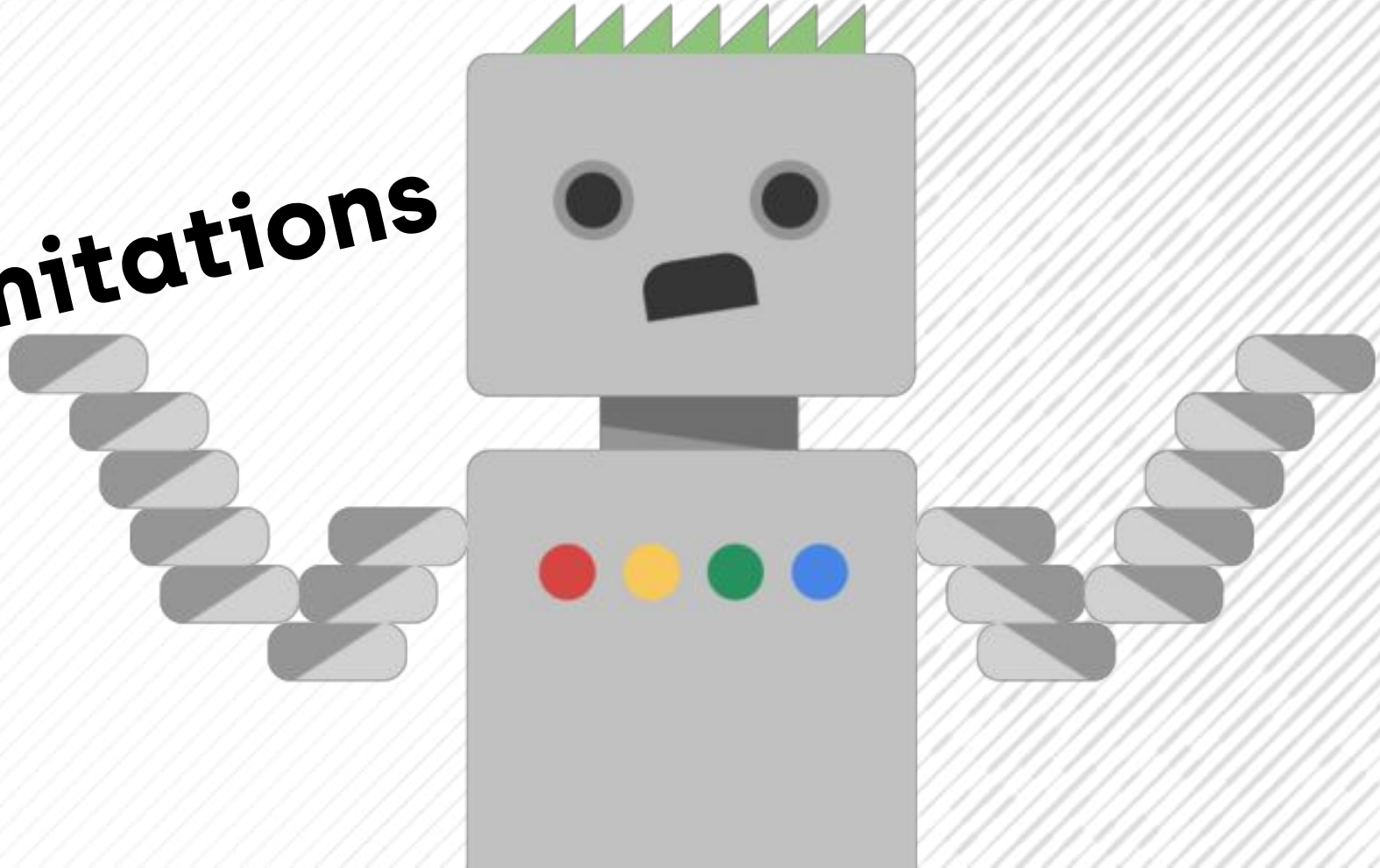
Privacy Terms

AliExpress

Cost?


Chrome 41
4 year old
iPhone
6
4,5 year old

Googlebot limitations

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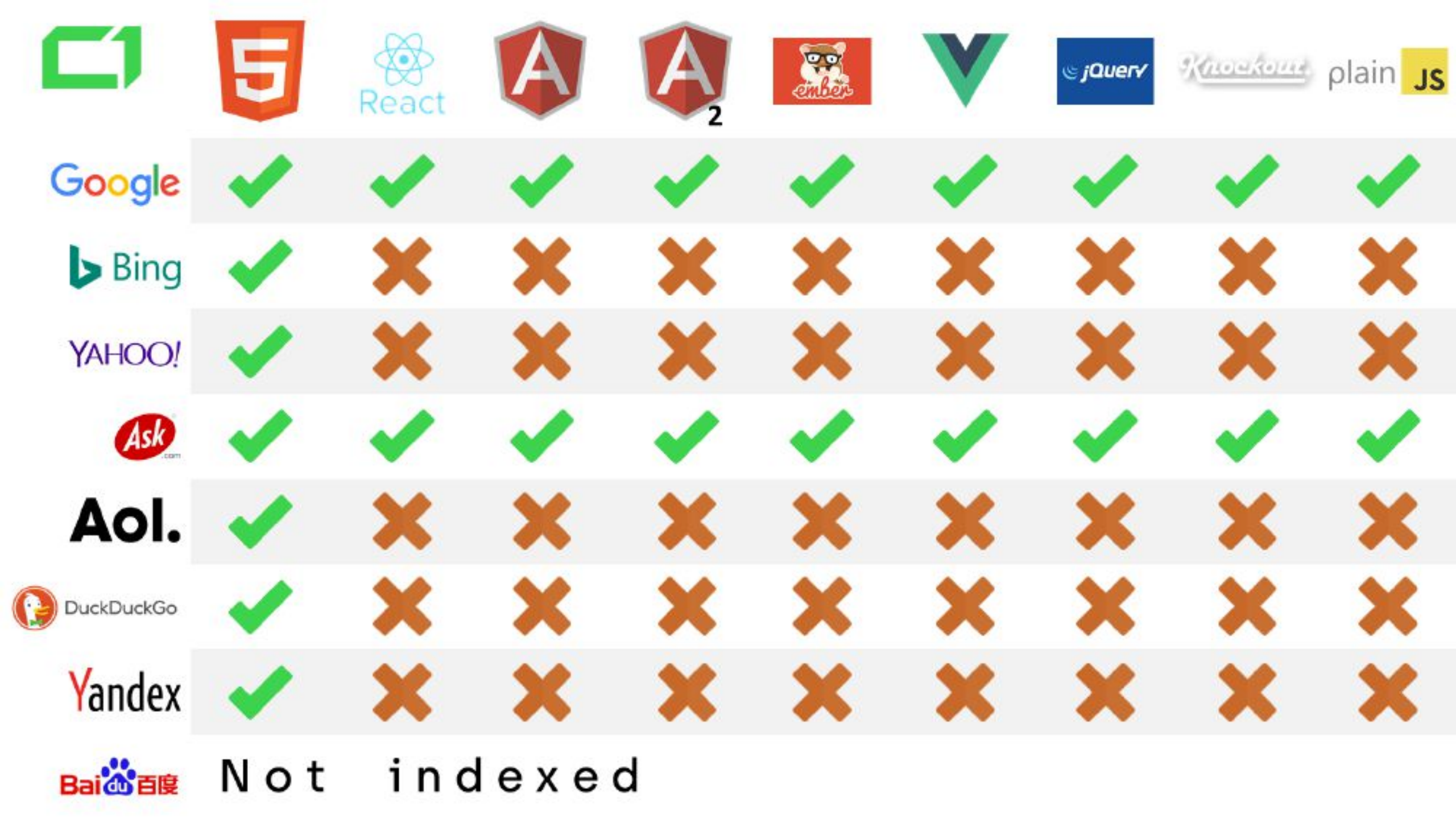
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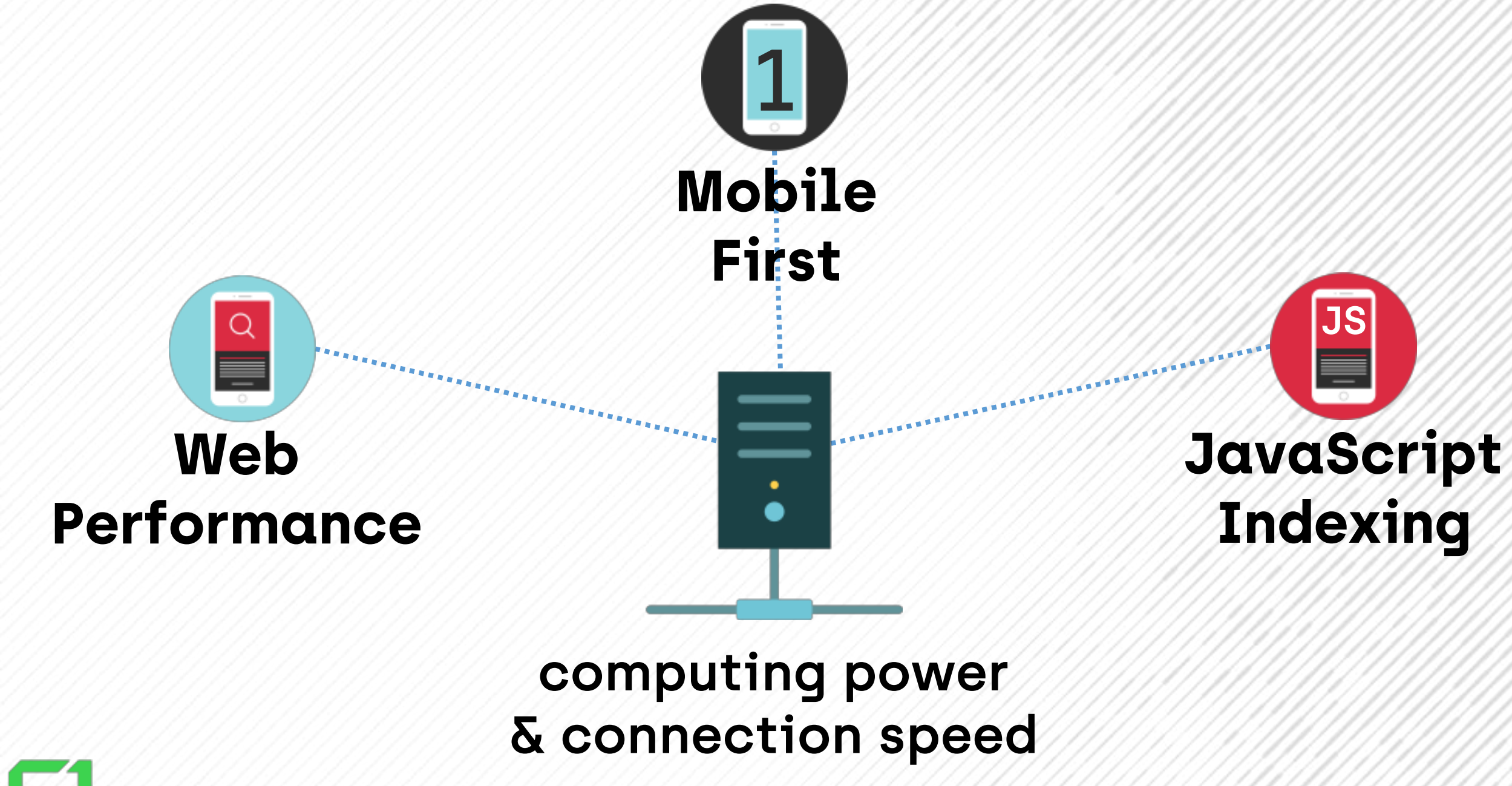
T
JS


1
Mobile
First
Web
Performance
JS
JavaScript
Indexing
computing power
& connection speed

Mobile first

+

Performance as a ranking factor

+

JavaScript SEO

=

Web Performance is mostly about mobile

Know your mobile phones

Design your stack with mobile in mind

Speed up your website or face a **very slow** (haha) death.

Thank you!

Bartosz Góralewicz

bartosz@onely.com

bart_goralewicz

www.onely.com

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