#MeasureCampLDN

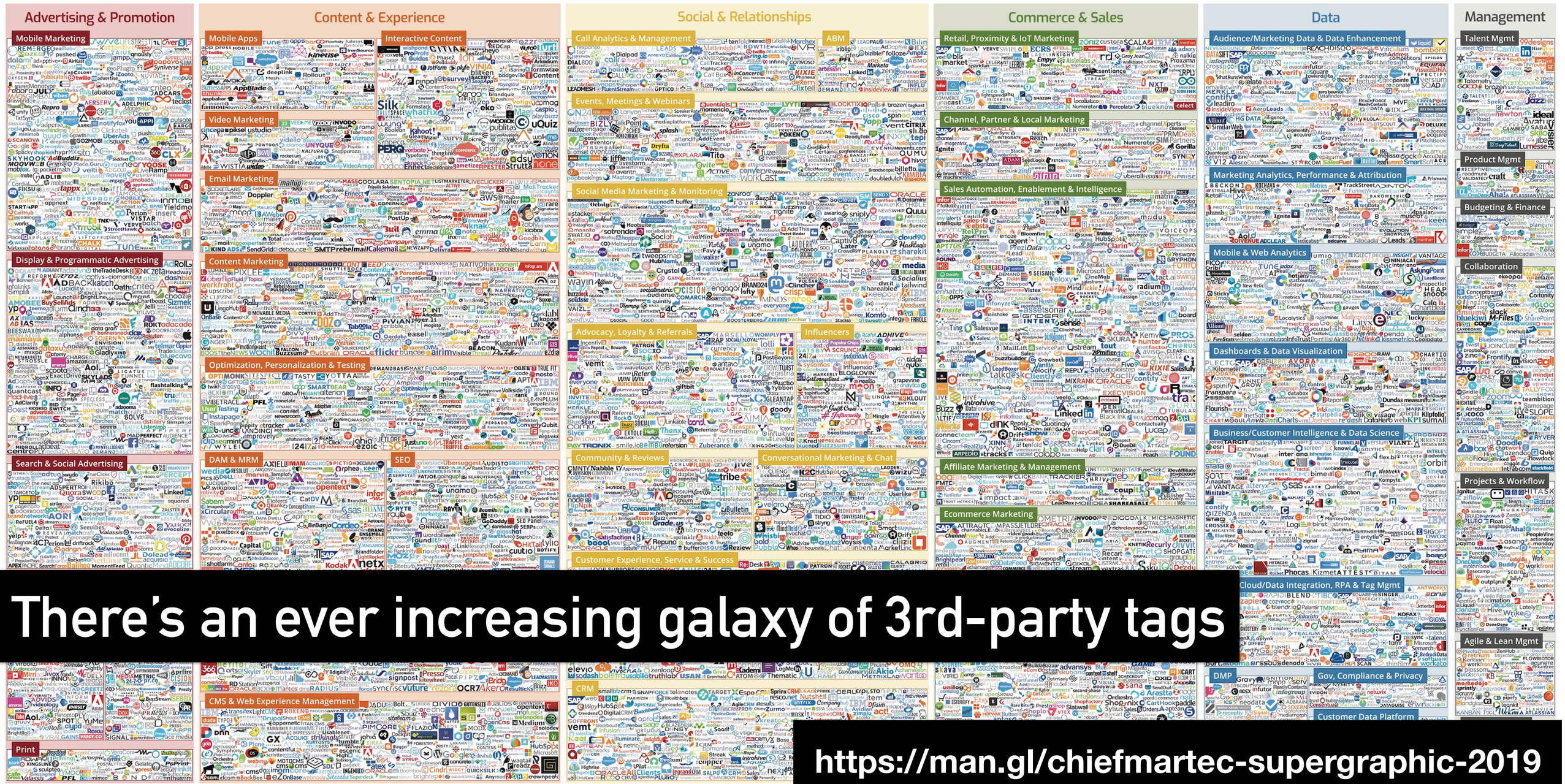
Reducing the Speed Impact of Third-Party Tags

Andy Davies · Sep 2019

https://www.flickr.com/photos/digitizedchaos/3964206549

chiefmartec.com Marketing Technology Landscape ("Martech 5000")

April 2019



There's an ever increasing galaxy of 3rd-party tags

https://man.gl/chiefmartec-supergraphic-2019

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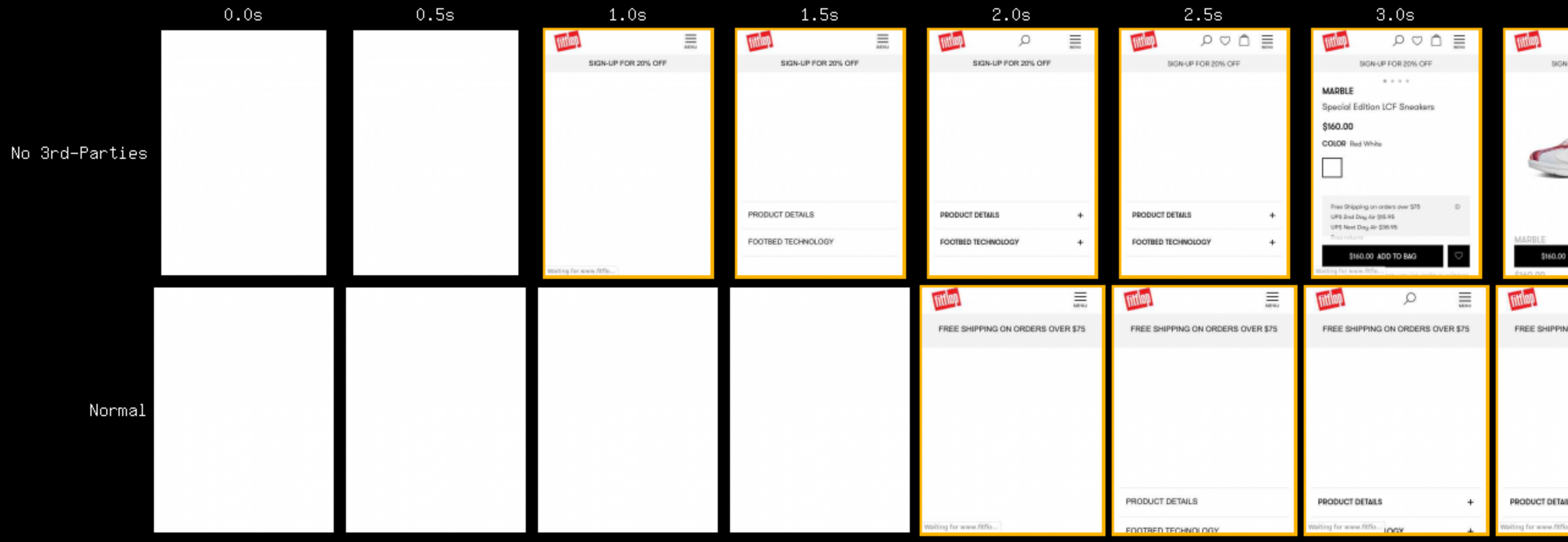
Tags compete for network bandwidth and processing time

https://www.flickr.com/photos/39908901@N06/7834345230

And slow down our visitors experience



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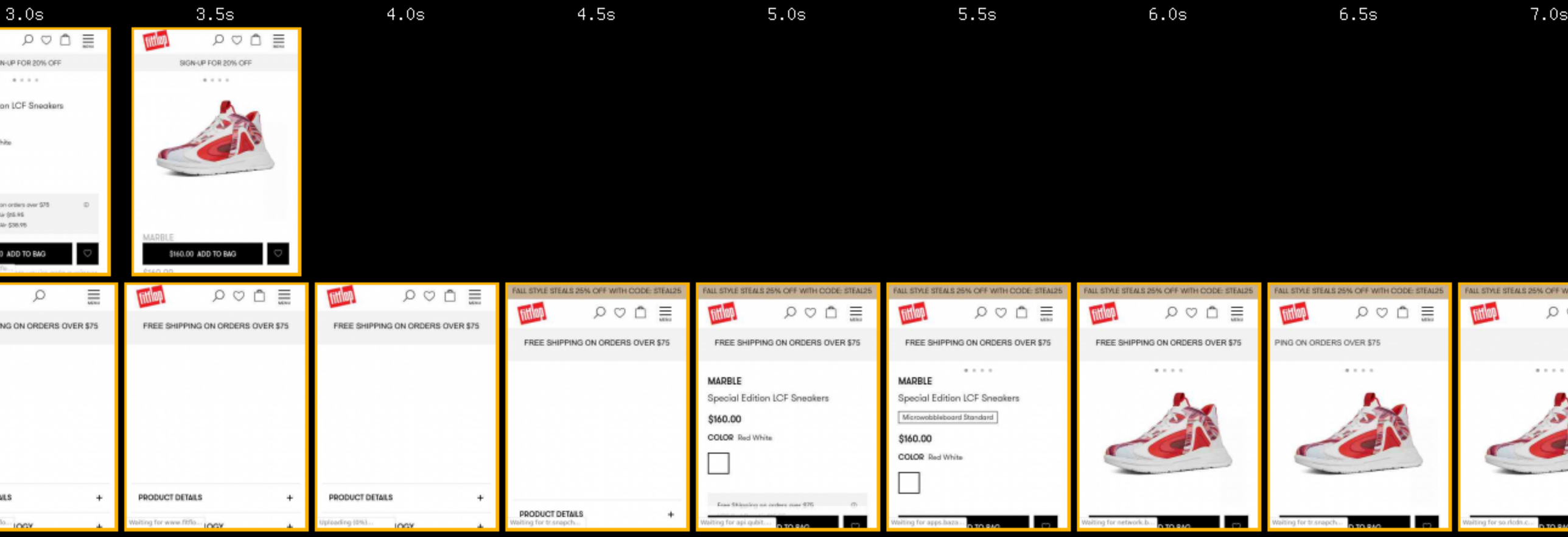

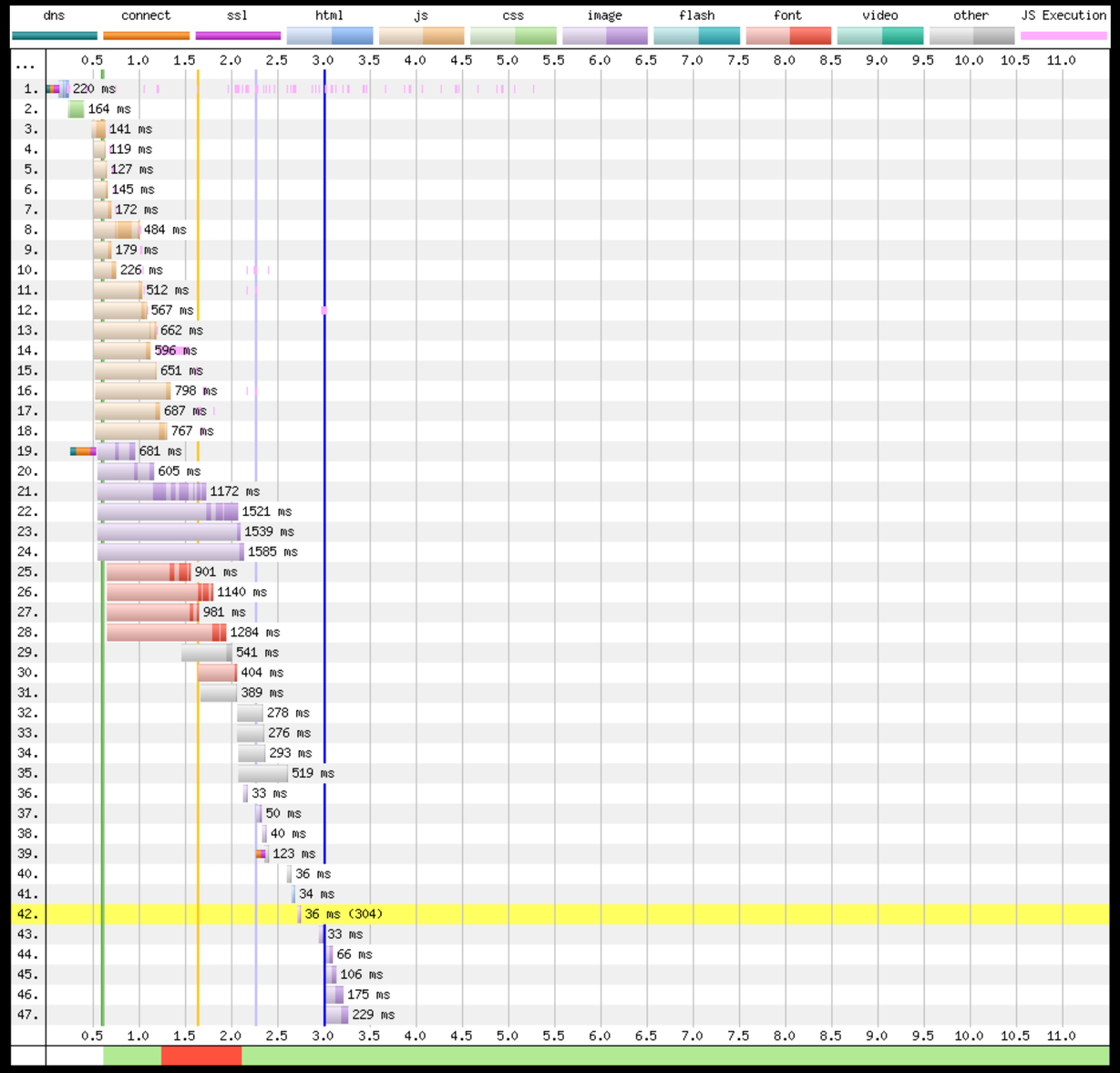
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JS Execution
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2. 164 ms
3. 141 ms
4. 119 ms
5. 127 ms
6. 145 ms
7. 172 ms
8. 484 ms
9. 179 ms
10. 226 ms
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13. 662 ms
14. 596 ms
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16. 798 ms
17. 687 ms
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21. 1172 ms
22. 1521 ms
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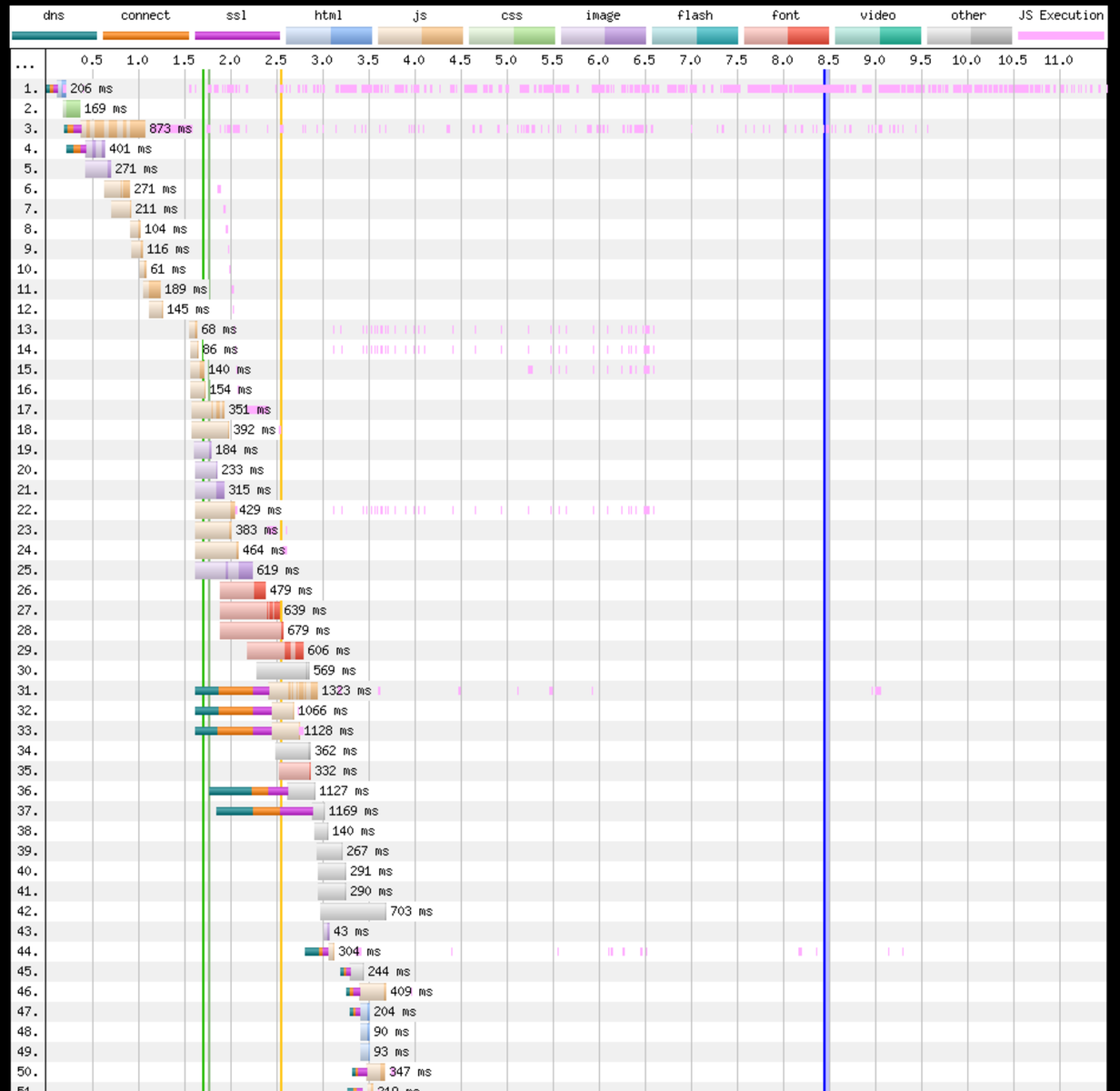
24. 1585 ms
25. 901 ms
26. 1140 ms
27. 981 ms
28. 1284 ms
29. 541 ms
30. 404 ms
31. 389 ms
32. 278 ms
33. 276 ms
34. 293 ms
35. 519 ms
36. 33 ms
37. 50 ms
38. 40 ms
39. 123 ms
40. 36 ms
41. 34 ms
42. 36 ms (304)
43. 33 ms
44. 66 ms
45. 106 ms
46. 175 ms
47. 229 ms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2. 169 ms
3. 873 ms
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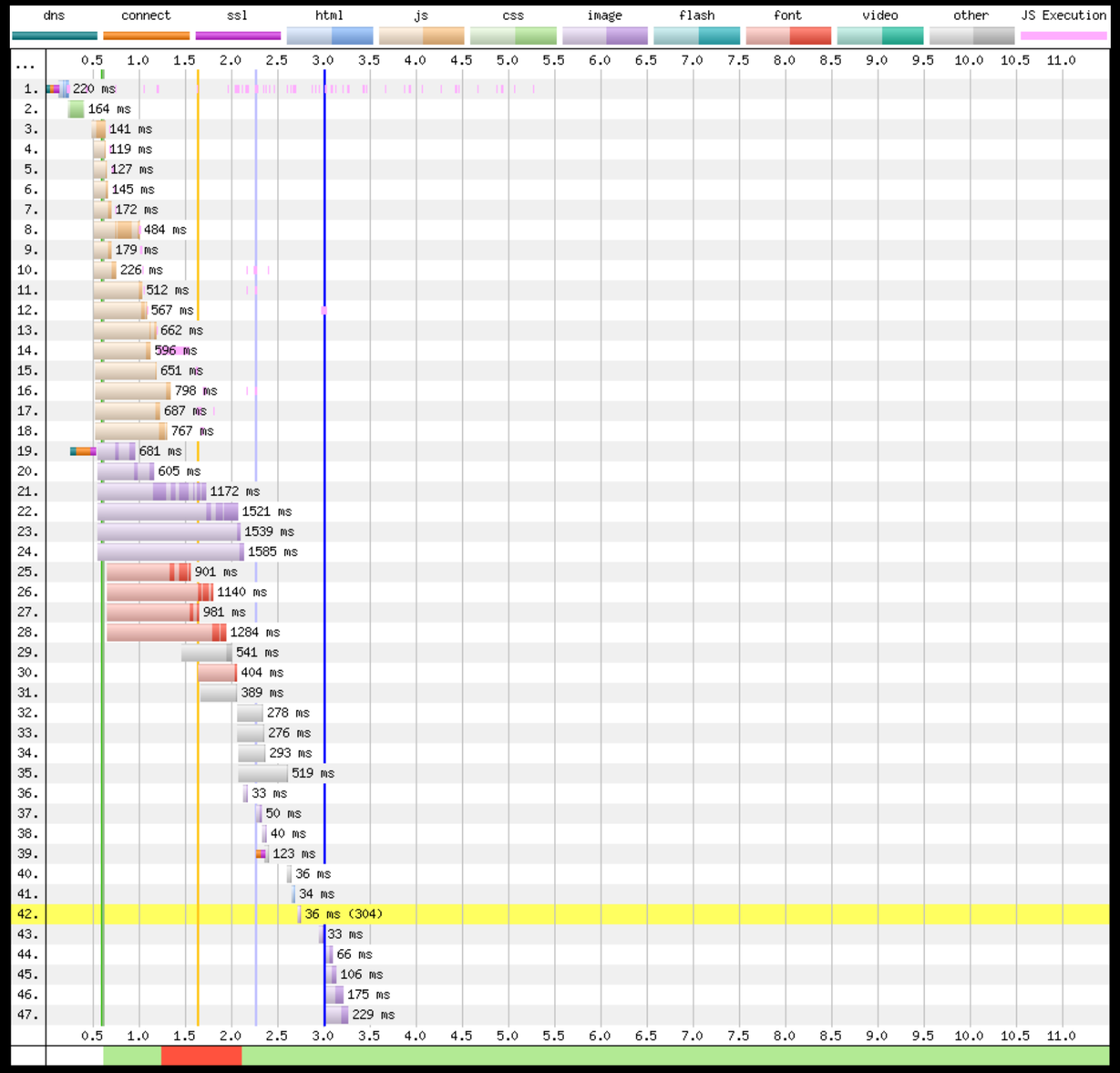
5. 271 ms
6. 271 ms
7. 211 ms
8. 104 ms
9. 116 ms
10. 61 ms
11. 189 ms
12. 145 ms
13. 68 ms
14. 86 ms
15. 140 ms
16. 154 ms
17. 351 ms
18. 392 ms
19. 184 ms
20. 233 ms
21. 315 ms
22. 429 ms
23. 383 ms
24. 464 ms
25. 619 ms
26. 479 ms
27. 639 ms
28. 679 ms
29. 606 ms
30. 569 ms
31. 1323 ms
32. 1066 ms
33. 1128 ms
34. 362 ms
35. 332 ms
36. 1127 ms
37. 1169 ms
38. 140 ms
39. 267 ms
40. 291 ms
41. 290 ms
42. 703 ms
43. 43 ms
44. 304 ms
45. 244 ms
46. 409 ms
47. 204 ms
48. 90 ms
49. 93 ms
50. 347 ms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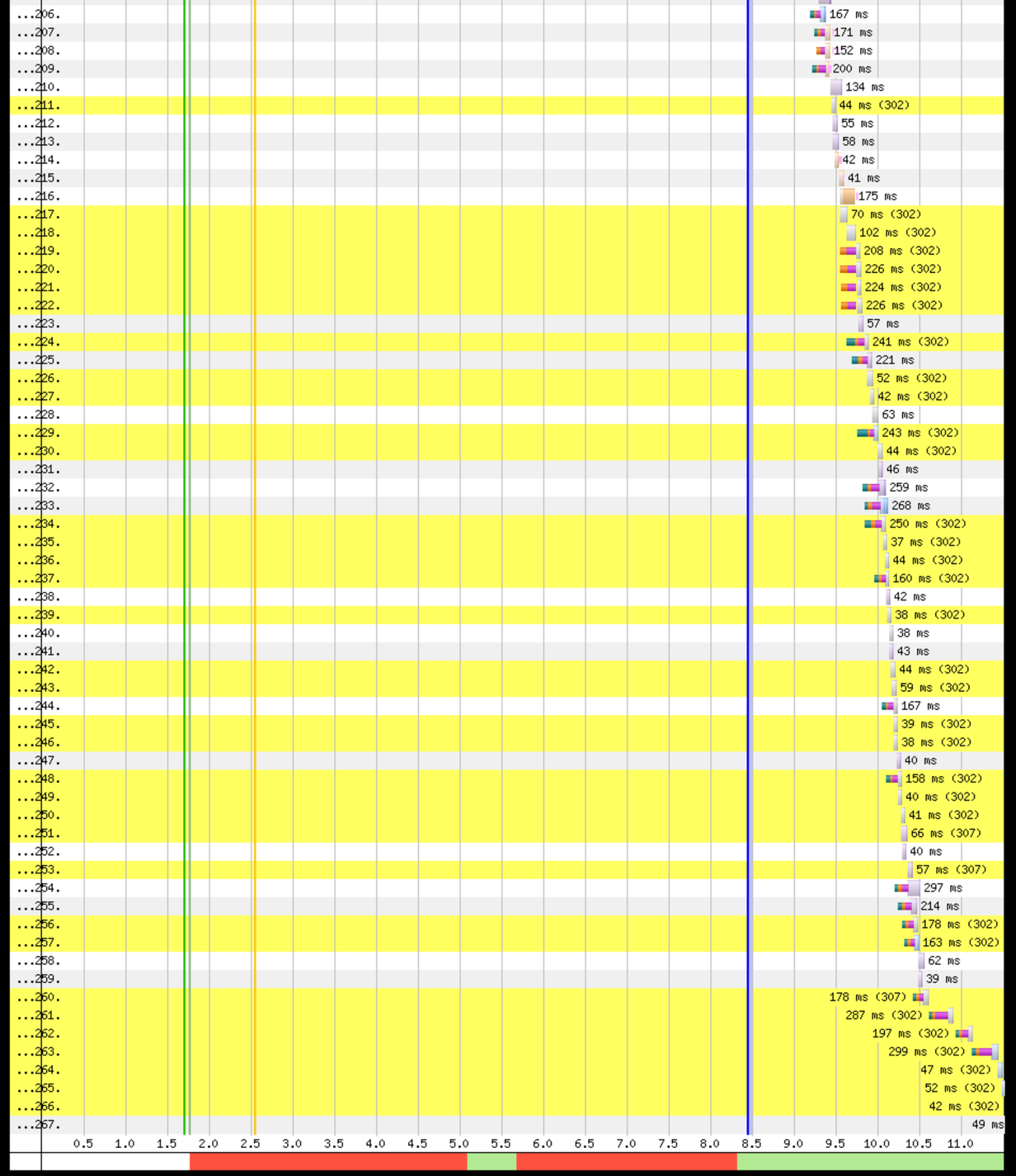
...206. 167 ms
...207. 171 ms
...208. 152 ms
...209. 200 ms
...210. 134 ms
...211. 44 ms (302)
...212. 55 ms
...213. 58 ms
...214. 42 ms
...215. 41 ms
...216. 175 ms
...217. 70 ms (302)
...218. 102 ms (302)
...219. 208 ms (302)
...220. 226 ms (302)
...221. 224 ms (302)
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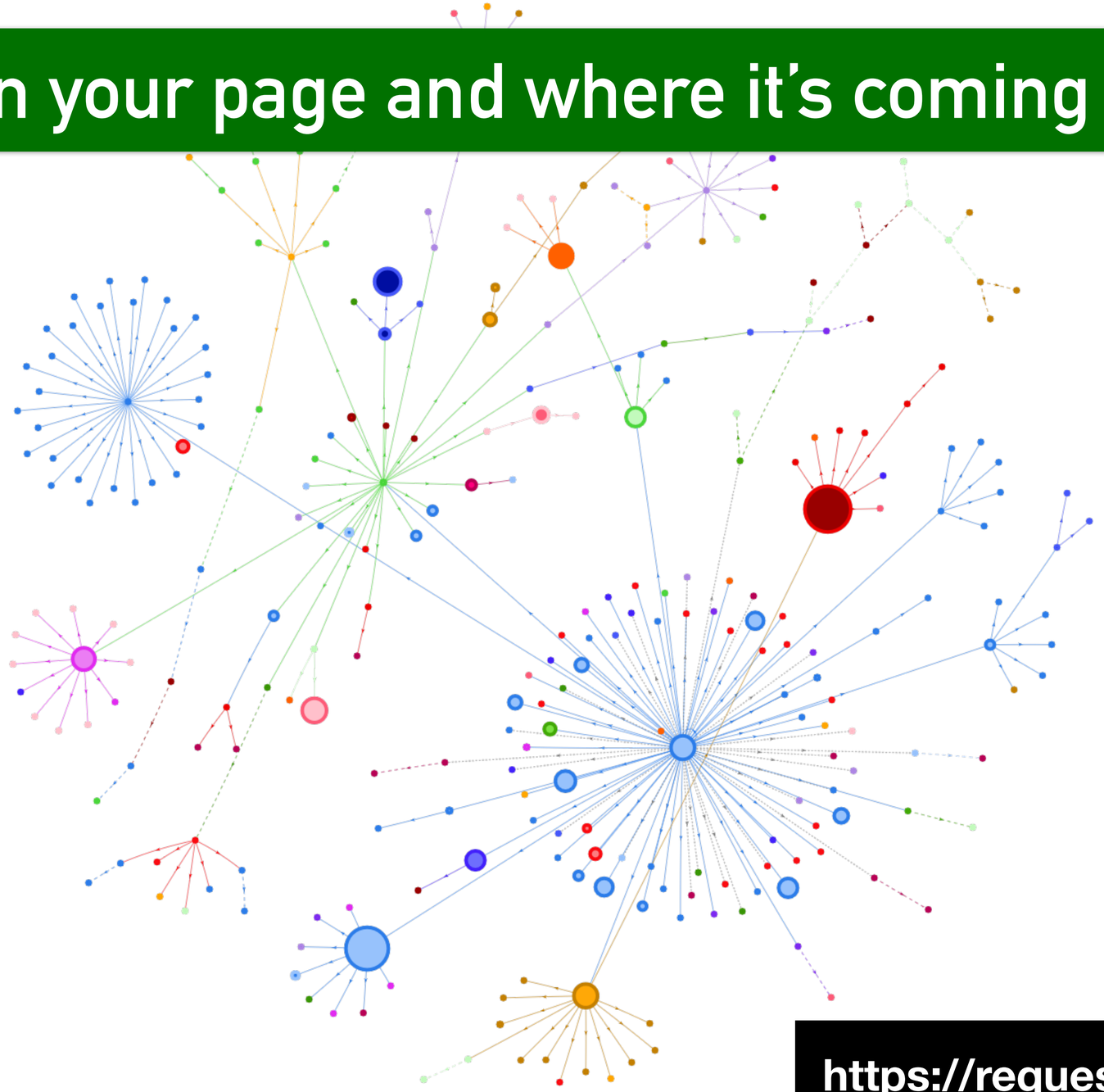
...226. 52 ms (302)
...227. 42 ms (302)
...228. 63 ms
...229. 243 ms (302)
...230. 44 ms (302)
...231. 46 ms
...232. 259 ms
...233. 268 ms
...234. 250 ms (302)
...235. 37 ms (302)
...236. 44 ms (302)
...237. 160 ms (302)
...238. 42 ms
...239. 38 ms (302)
...240. 38 ms
...241. 43 ms
...242. 44 ms (302)
...243. 59 ms (302)
...244. 167 ms
...245. 39 ms (302)
...246. 38 ms (302)
...247. 40 ms
...248. 158 ms (302)
...249. 40 ms (302)
...250. 41 ms (302)
...251. 66 ms (307)
...252. 40 ms
...253. 57 ms (307)
...254. 297 ms
...255. 214 ms
...256. 178 ms (302)
...257. 163 ms (302)
...258. 62 ms
...259. 39 ms
...260. 178 ms (307)
...261. 287 ms (302)
...262. 197 ms (302)
...263. 299 ms (302)
...264. 47 ms (302)
...265. 52 ms (302)
...266. 42 ms (302)
...267. 49 ms
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 10.5 11.0

How do we balance the value versus the impact?

https://www.flickr.com/photos/gilgamesh/183037111

Know what's on your page and where it's coming from



https://requestmap.herokuapp.com

Audit 3rd-Party Tags – Key Questions

Are you still paying for the service?

Does anyone use it?

Are there any duplicates?

When should it be loaded?

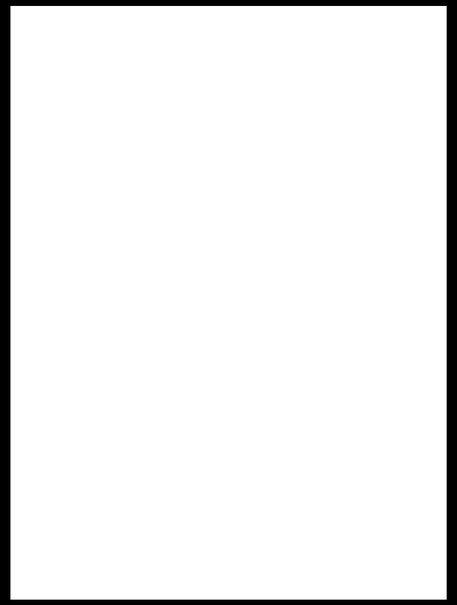
What’s its impact on the visitors’ experience?

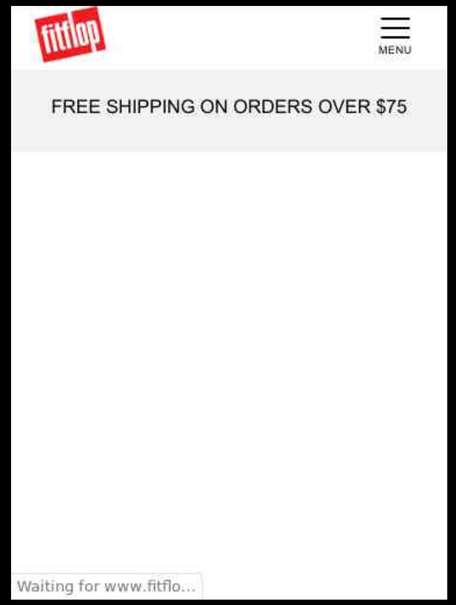
Page load is a journey… with milestones along the way

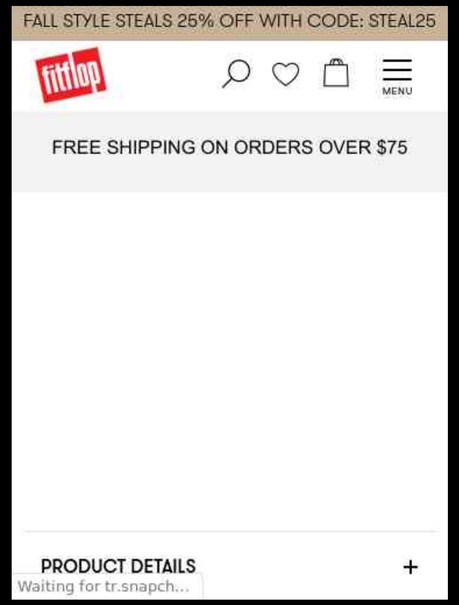
Working?

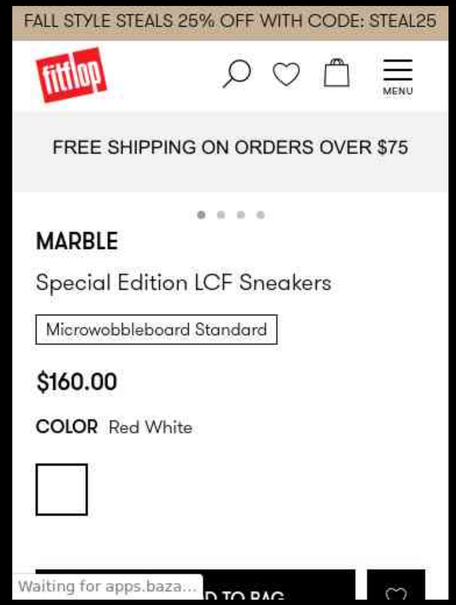
Useful?

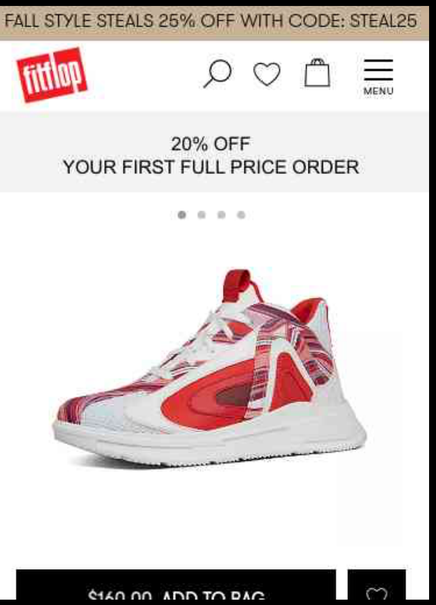
Usable?



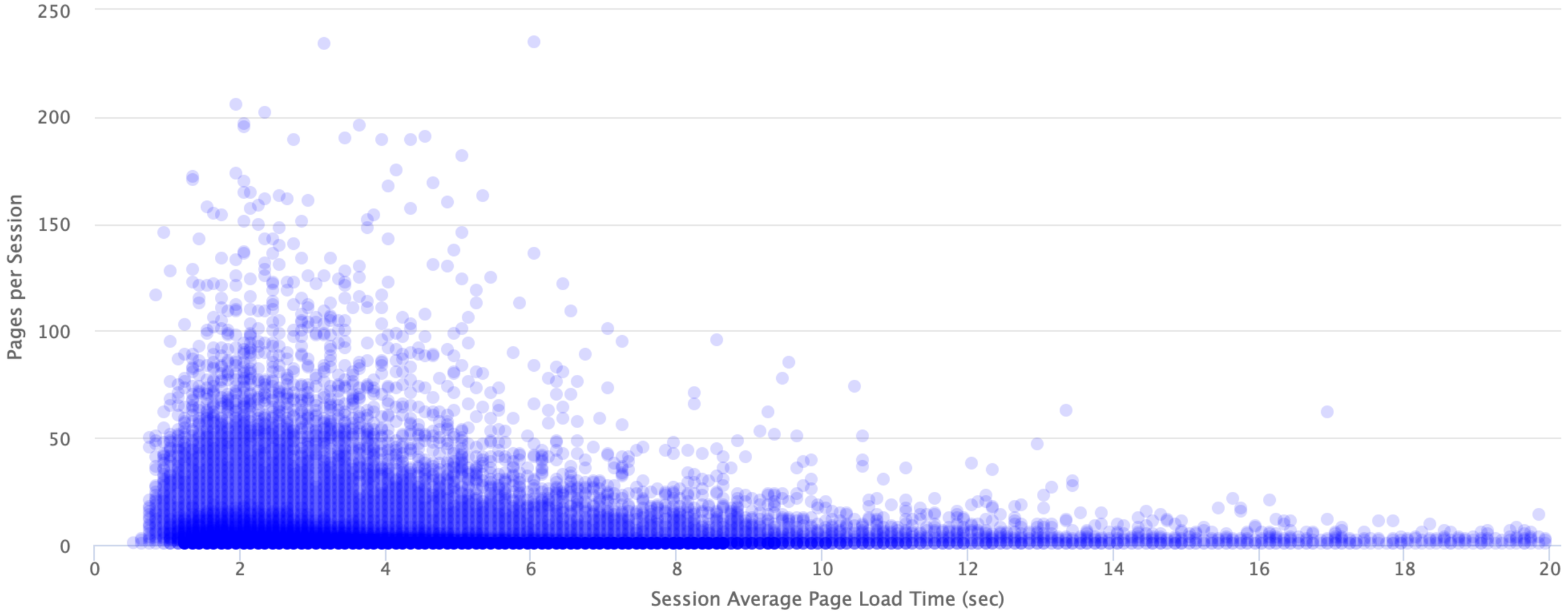








Visitor's who have better experiences are more engaged

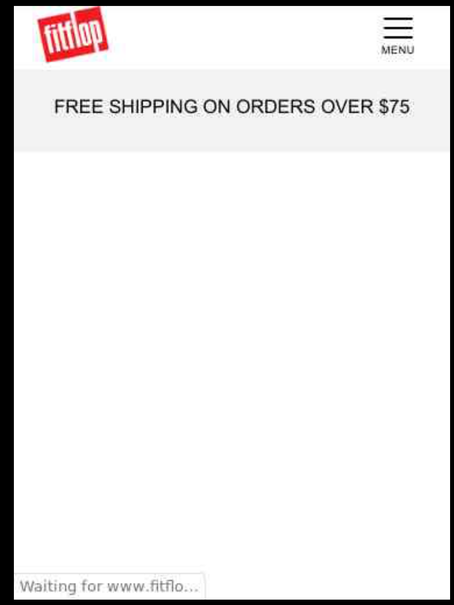


Where do our tags fit into that journey?

Tags in <head> of page have an outsized impact

Common Tags

- Tag Managers
- AB / MV Testing
- Personalization
- Analytics



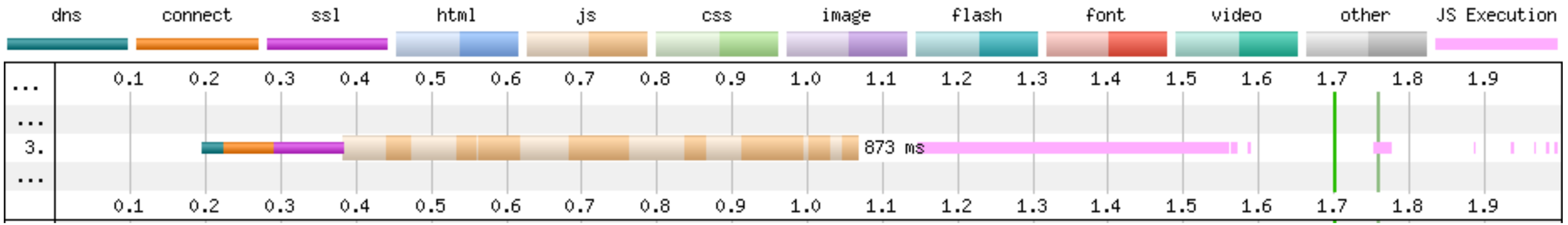
The most dangerous line of JavaScript?

```
    .
    .
    <script src="https://cdn.example.com/third-party-tag.js">
    .
    .
</head>
```

HTML parsing stops until script has downloaded and executed, the larger the script the longer this takes

If 3rd-party host is unresponsive browser waits until the connection times out

In the case of our FitFlop example…



1.3s

Make connection

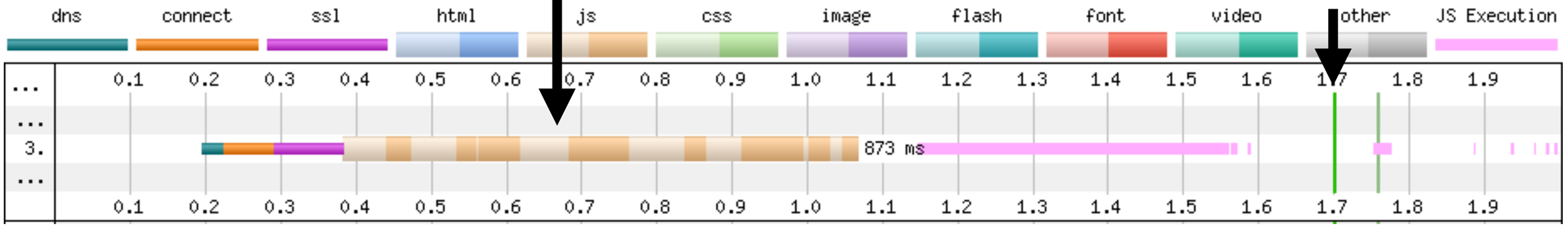
Download script

Execute script

In the case of our FitFlop example…

In case you're wondering, this is Qubit's script

And it's the reason why a visitor has to wait 1.7s before seeing content



1.3s

Make connection

Download script

Execute script

Self-hosting the script may trim off some time

How we shaved 1.7 seconds off casper.com by self-hosting Optimizely

Kyle Rush Follow

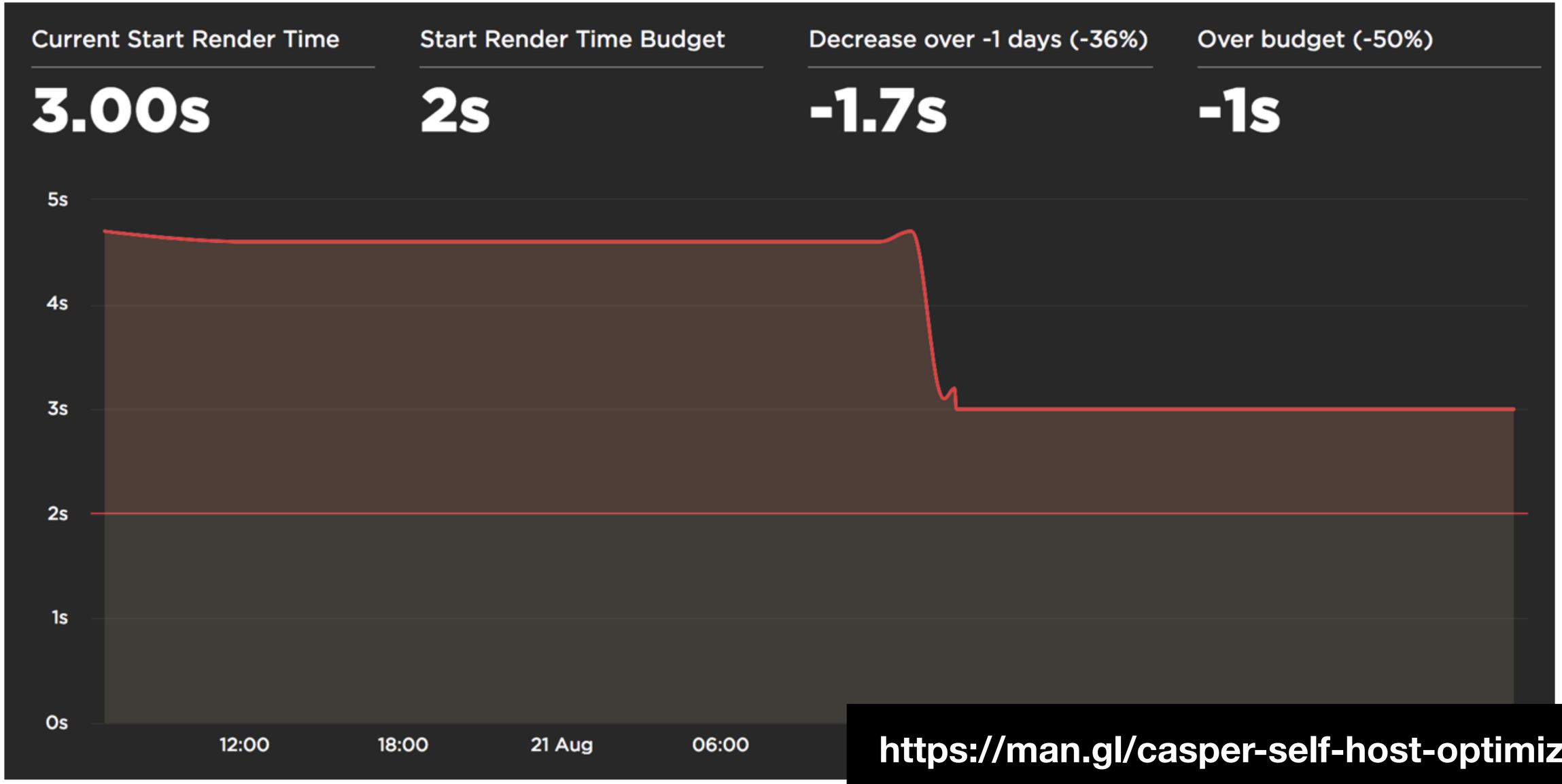
Aug 28, 2018 · 7 min read

We recently deployed a change to casper.com that loaded a piece of 3rd party JavaScript from our own server instead of the vendor's server. This change shaved 1.7 seconds off of the start render time:

https://man.gl/casper-self-host-optimizely

change shaved 1.7 seconds off of the start render time:

Self-hosting the script may trim off some time



https://man.gl/casper-self-host-optimizely

Optimizely support serving their tags though your own CDN

Content Delivery Networks (CDNs) and Optimizely X

Last updated: Mar 27, 2019

THIS ARTICLE WILL HELP YOU:

- Quickly find information in the Knowledge Base on **CDNs and self-hosting** the Optimizely snippet

Instructions for:

- Akamai
- AWS Cloudfront
- Cloudflare
- Fastly

Optimizely uses a Content Delivery Network (CDN), a network of web servers located around th
to provide service for the rendering the snippet. This page is intended to act as a hub for our
Knowledge Base articles on CDNs and related topics, like self-hosting the snippet.

ks

ely

Self-hosting with CDNs

Content Delivery Networks

- CDN load balancing: How Optimizely affects page load speed

https://man.gl/self-host-optimizely-snippet

Shrinking the size of tag reduces download and runtime cost

Self-hosting removes network connection time but doesn't improve download or script execution time

But we still have some control over these things:

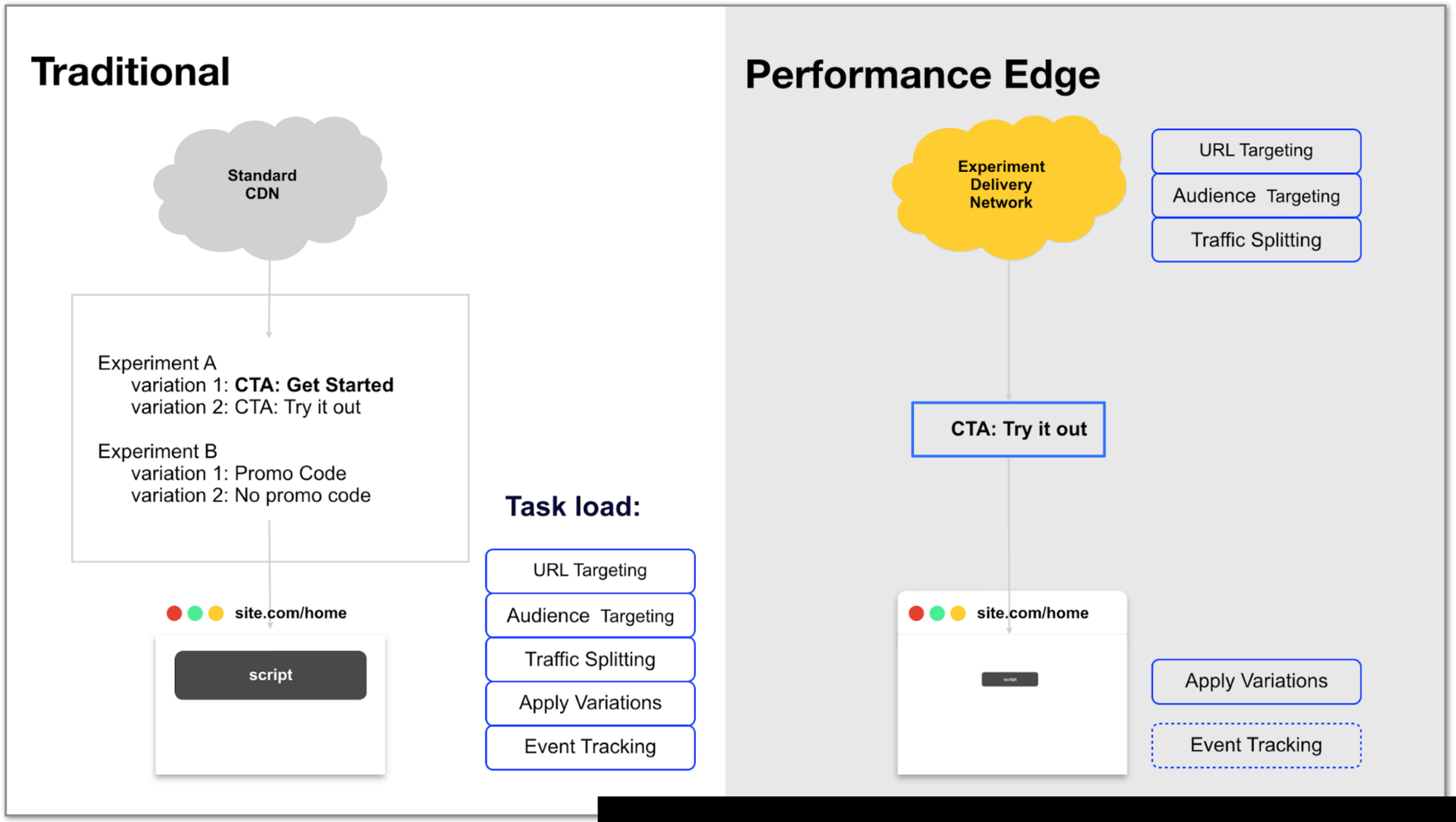
- Experiments - variants, audiences, URLs etc.
- Tag Managers - number of tags

Get £1 Next Day Delivery*
Students Get 10% Off
Don't Miss Out - Sign Up To Our Mailing List

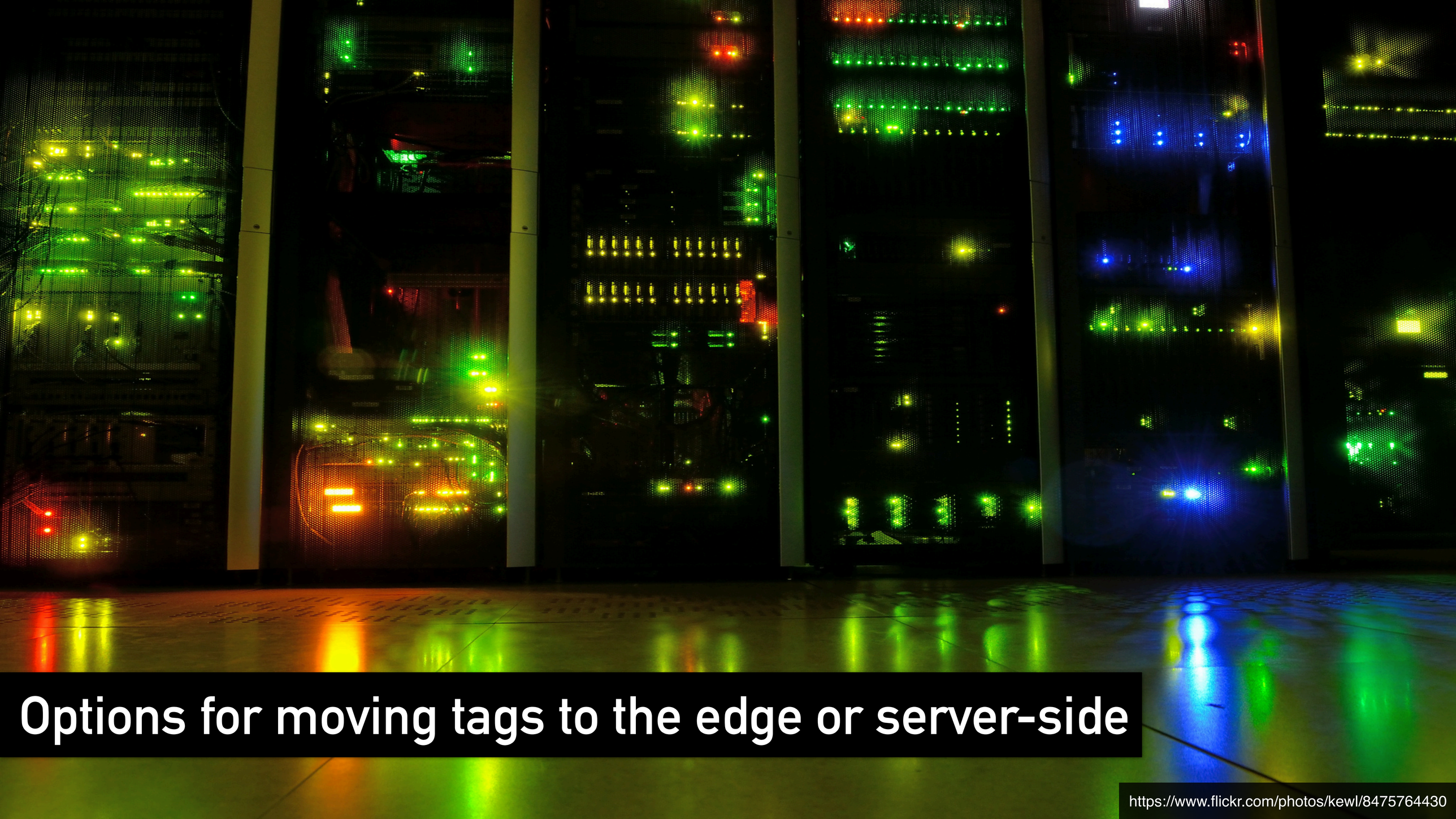
Schuh use two tag containers

4.9 ★★★★★
Google
Customer Reviews

Optimizely supports moving snippet processing to the edge



https://man.gl/optimizely-experimenting-at-the-edge



Options for moving tags to the edge or server-side

https://www.flickr.com/photos/kewl/8475764430

Prefer non-blocking tags

```
<script src="https://cdn.example.com/third-party-tag.js" async>
```

Browser is no longer blocked on script download, but will be **blocked when script executes**

Scripts injected via a script e.g. a Tag Manager, are generally async by default

(Some Tag Managers use document.write - avoid these!!!)

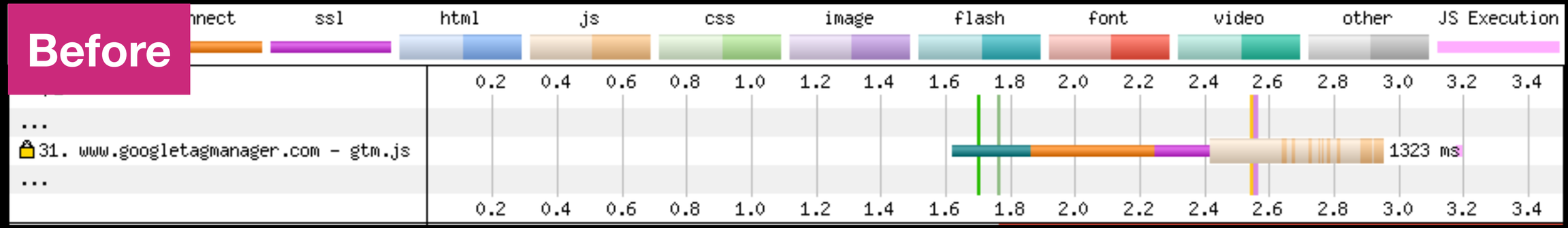
You'll also see async scripts written like this

```
<script>
    (function(w, d, s, l, i) {
        w[l] = w[l] || [];
        w[l].push({
            'gtm.start': new Date().getTime(),
            event: 'gtm.js'
        });
        var f = d.getElementsByTagName(s)[0],
            j = d.createElement(s),
            dl = l != 'dataLayer' ? '&l=' + l : '';
        j.async = true;
        j.src = 'https://www.googletagmanager.com/gtm.js?id=' + i + dl;
        f.parentNode.insertBefore(j, f);
    })(window, document, 'script', 'dataLayer', 'GTM-XXXX');
</script>
```

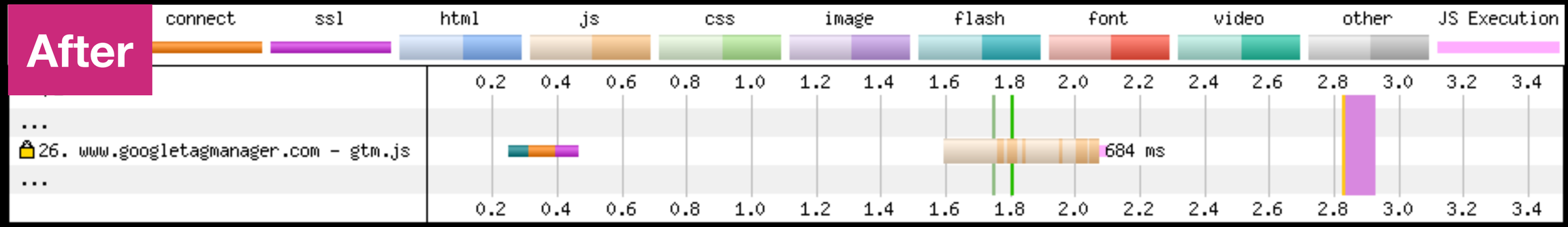
Preconnect hint can remove connection time from critical path

```
<link rel="preconnect" href="https://www.googletagmanager.com">
```

Before



After



https://man.gl/wpt-preconnect-hints

Watch out for anti-flicker snippets

```
<script>
    //prehiding snippet for Adobe Target with asynchronous Launch deployment
    (function(g, b, d, f) {
        (function(a, c, d) {
            if(a) {
                var e = b.createElement("style");
                e.id = c;
                e.innerHTML = d;a.appendChild(e)
            }
        })(b.getElementsByTagName("head")[0], "at-body-style", d);
        setTimeout(function() {
            var a=b.getElementsByTagName("head")[0];
            if(a) {
                var c = b.getElementById("at-body-style");
                c && a.removeChild(c)
            }
        }, f)
    })(window, document, "body {opacity: 0 !important}", 3E3);
</script>
```

Hides page contents for up to 3 seconds

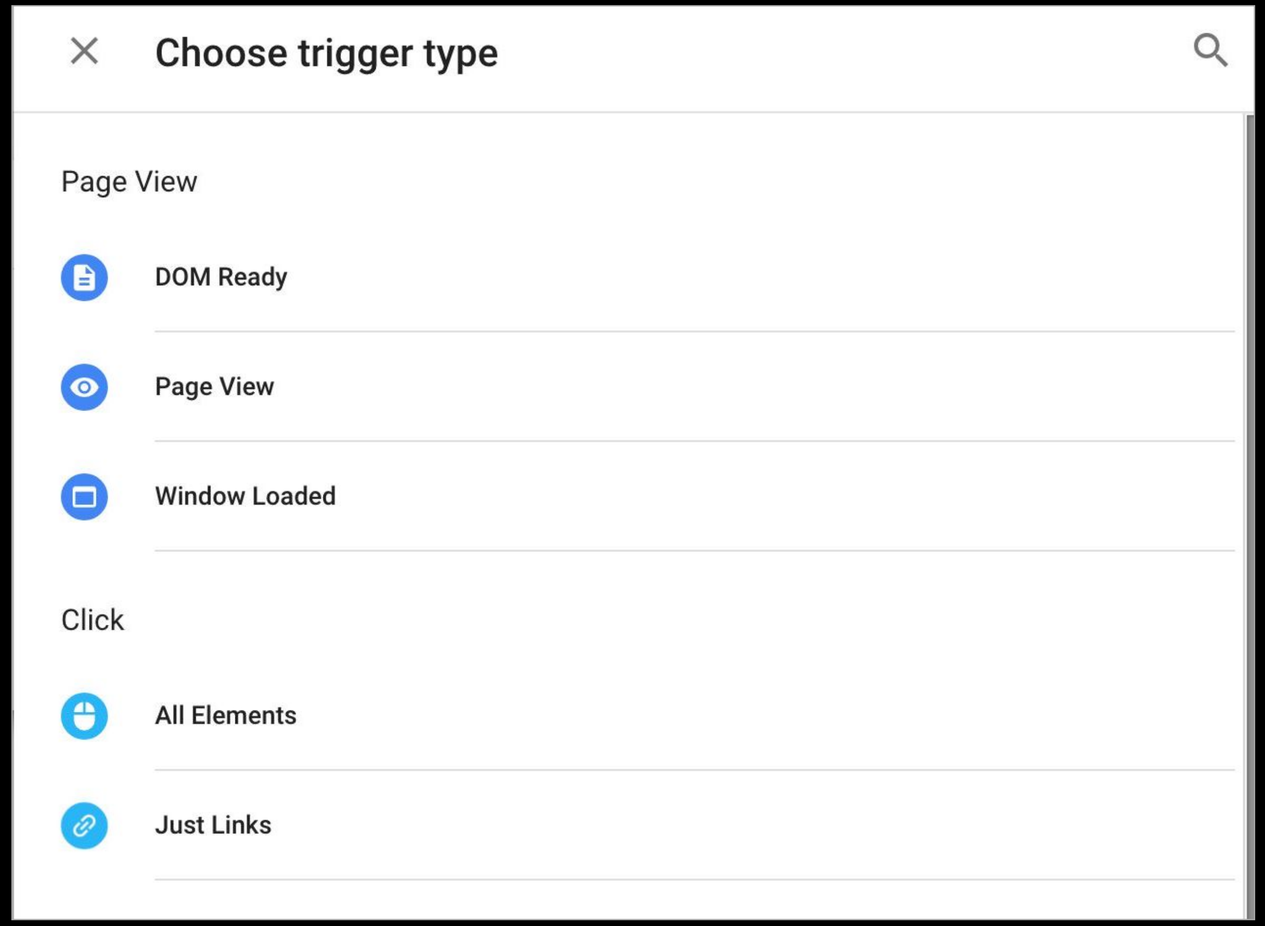
Tags directly in page vs in a Tag Manager

Directly in page == run as soon as available, may delay important content or interfere with visitor interaction

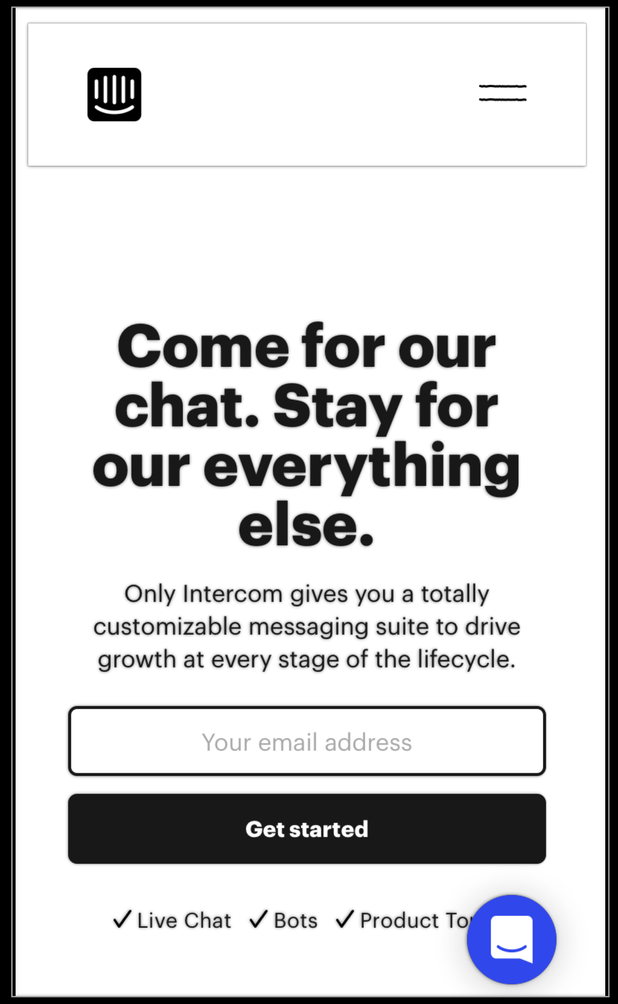
Tag Managers == control over when script executes

Rule of Thumb: analytics in page, everything else Tag Manager

Your Tag Manager is your friend, just don't accept the defaults



If a tag needs visitor interaction delay it's load

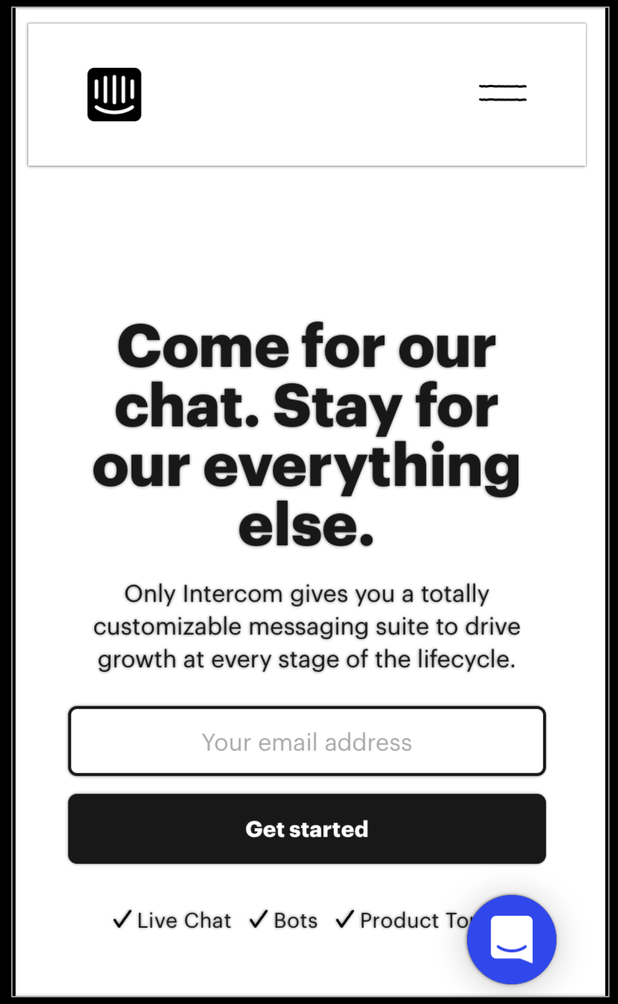


Chat widgets, feedback widgets, session replay etc. only make sense once the page is usable.

So delay load until the page has loaded

Window.loaded in GTM terms

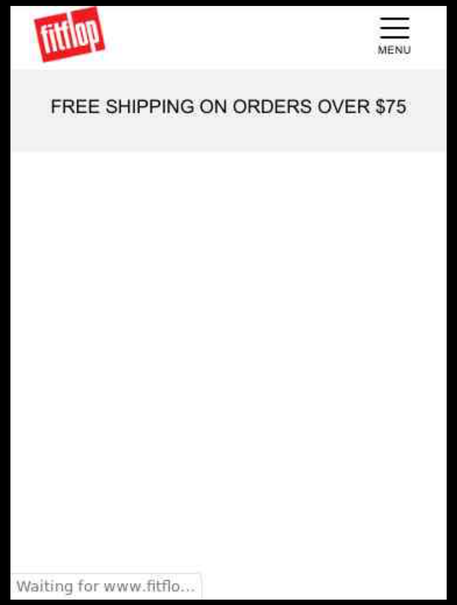
Encourage providers to break up tags



Only the floating action button needs to be loaded quickly

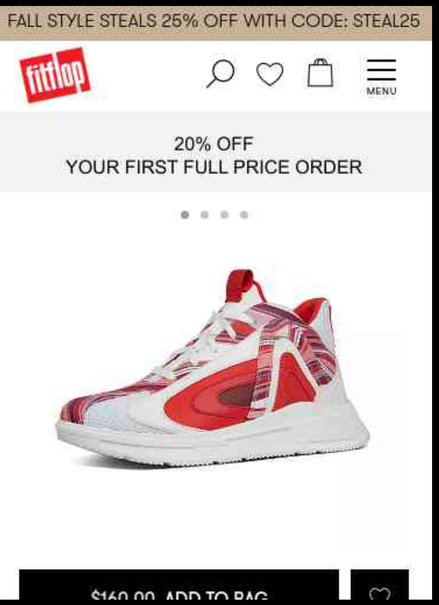
The script that displays the actual chat box can be lazy loaded or perhaps even wait until visitor interaction

Talked about the start and the end… what about the middle?



This is a fuzzy area…

- Does the tag provide user content?
- How much data loss are you willing allow?
- Try not to block the browser



Do you even need a tag… could you just fire a tracking pixel?

Adding controls to Google Tag Manager

Category: Blog

This page was originally created on 25-May-2019 and last edited on 30-Jul-2019.

Introduction

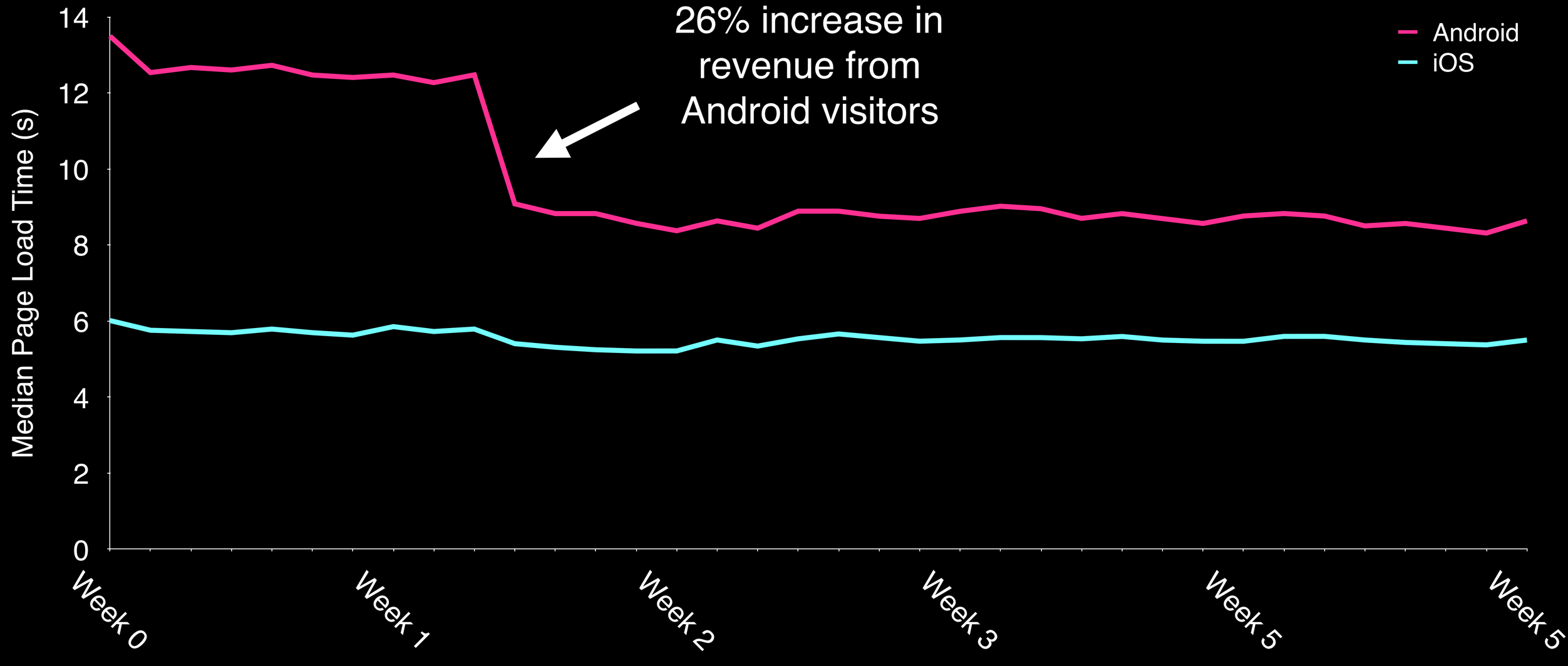
Google Tag Manager (GTM) is extremely popular and is used by 22% of all websites. As it's name suggests, it allows managing of marketing tags on a website. Marketing departments love these tags as they allow them to track their marketing campaigns and see if they are directing their budgets to the right places. So if they buy a lot of Facebook ads, they like to see how many people come to the site (which can be measured by clicks on the ad) but also crucially if those clicks led to anything: typically purchases or sign ups. This requires linking the click from the ad, to an action on specific pages (e.g. confirmation pages). So this usually requires adding of a piece of JavaScript to the confirmation page. Similarly remarketing tags involve telling an ad agency that someone was looking at a product on your site, and then the ad agency using that information to display ads for that product, or similar ones, to try to entice you back to finish that purchase. This requires a small snippet of JavaScript on the product page which fires off a call to the ad agency and then they take care of showing appropriate ads when it sees the same user on another site.

How to add these JavaScript snippets depends on how the website is set up and what Content Management System (if any) is used to publish the site. Often it requires web developers to release the snippet onto a page, or to fire it on a certain action. And often these snippets change slightly each time they launch a new ad campaign. Rather than having to go to web developers each time they want to add or change tracking tags to their site, the marketing department can ask the web developers to add the GTM JavaScript snippet once to all pages, and then manage the tags in there. GTM allows you then to fire tags based on various triggers so it will only load the appropriate tags at the appropriate time (on page load, when an event occurs, or whatever). So you can fire a Google Adwords snippet if the URL contains "checkout-complete.html" for example, and can even grab hold of the products purchased and send them to Google Adwords.

This all sounds well and good, and frees up web developers to do real web development and allows m
there are some serious downsides to using a tag manager like GTM: in particular security and perfor
scripts and code into the website. JavaScript is a really powerful language and can fire off requests to ad agencies, or change the entire look and feel of the

https://man.gl/barry-bollard-gtm

Removing poorly performing Third-Parties pays dividends



Other sites have shared their experience

Improving third-party web performance at The Telegraph

Gareth Clubb Follow

Apr 30 · 9 min read

At The Telegraph we're currently going through a process of rebuilding our public-facing website. This gives us t

https://man.gl/telegraph-3rd-party-performance

the existing build but also write some of the code from scratch. You can see

In Summary

3rd Party Tags can make or break your visitor experience

Audit tags - remove the ones that aren’t needed

Don’t accept the defaults - choreograph tag loading

Test speed impact before deploying to live

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