



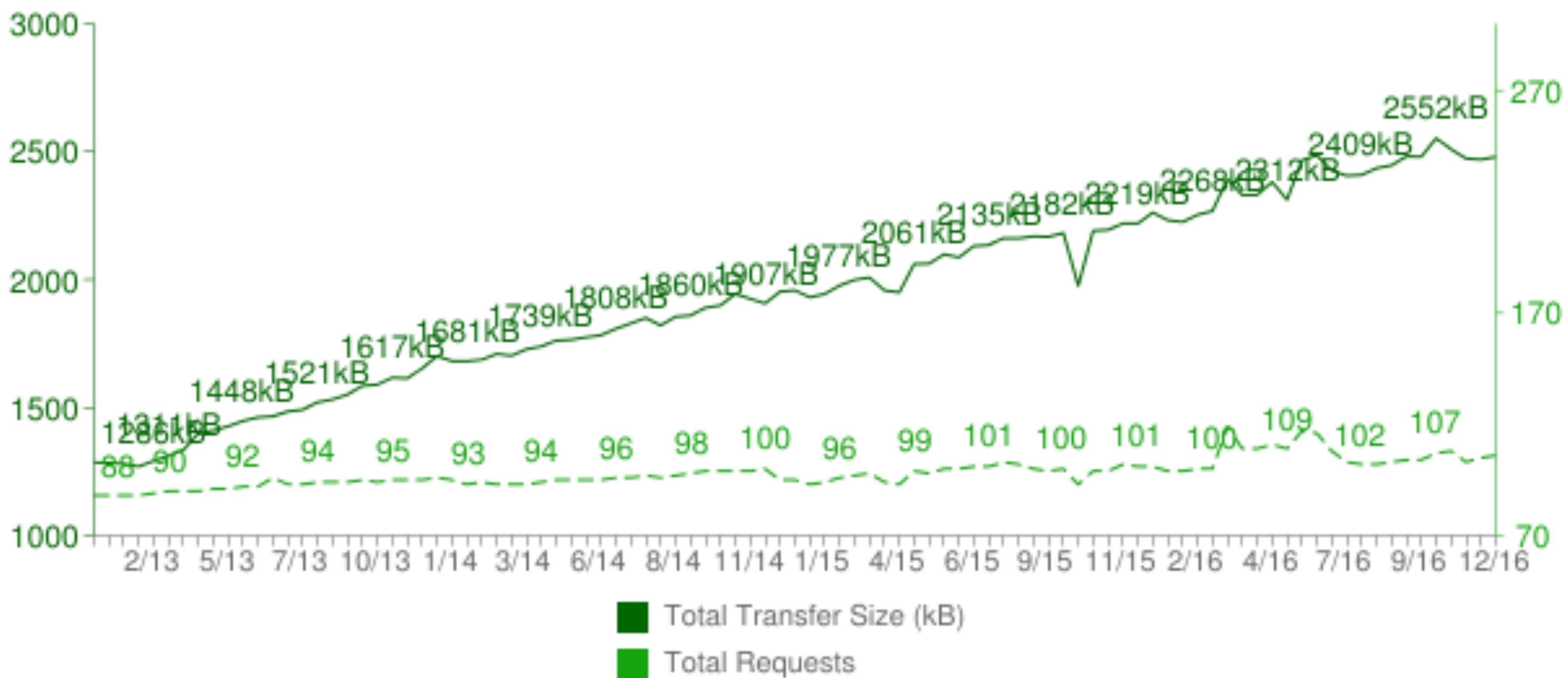
PERFORMANCE MATTERS

CMD 13 maart 2017
Declan Rek

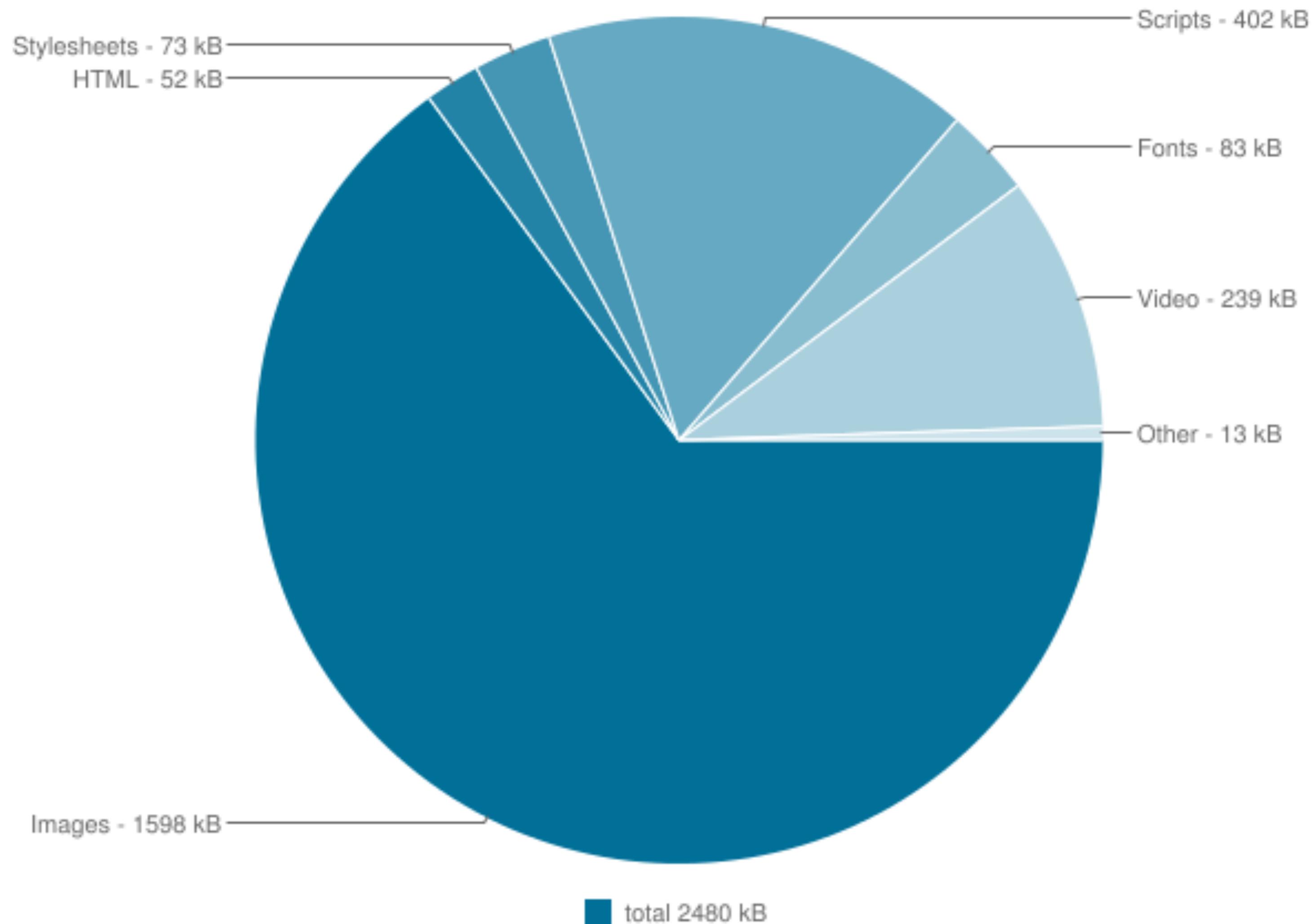
PERFORMANCE MATTERS



Total Transfer Size & Total Requests



Average Bytes per Page by Content Type



HIGH EXPECTATIONS

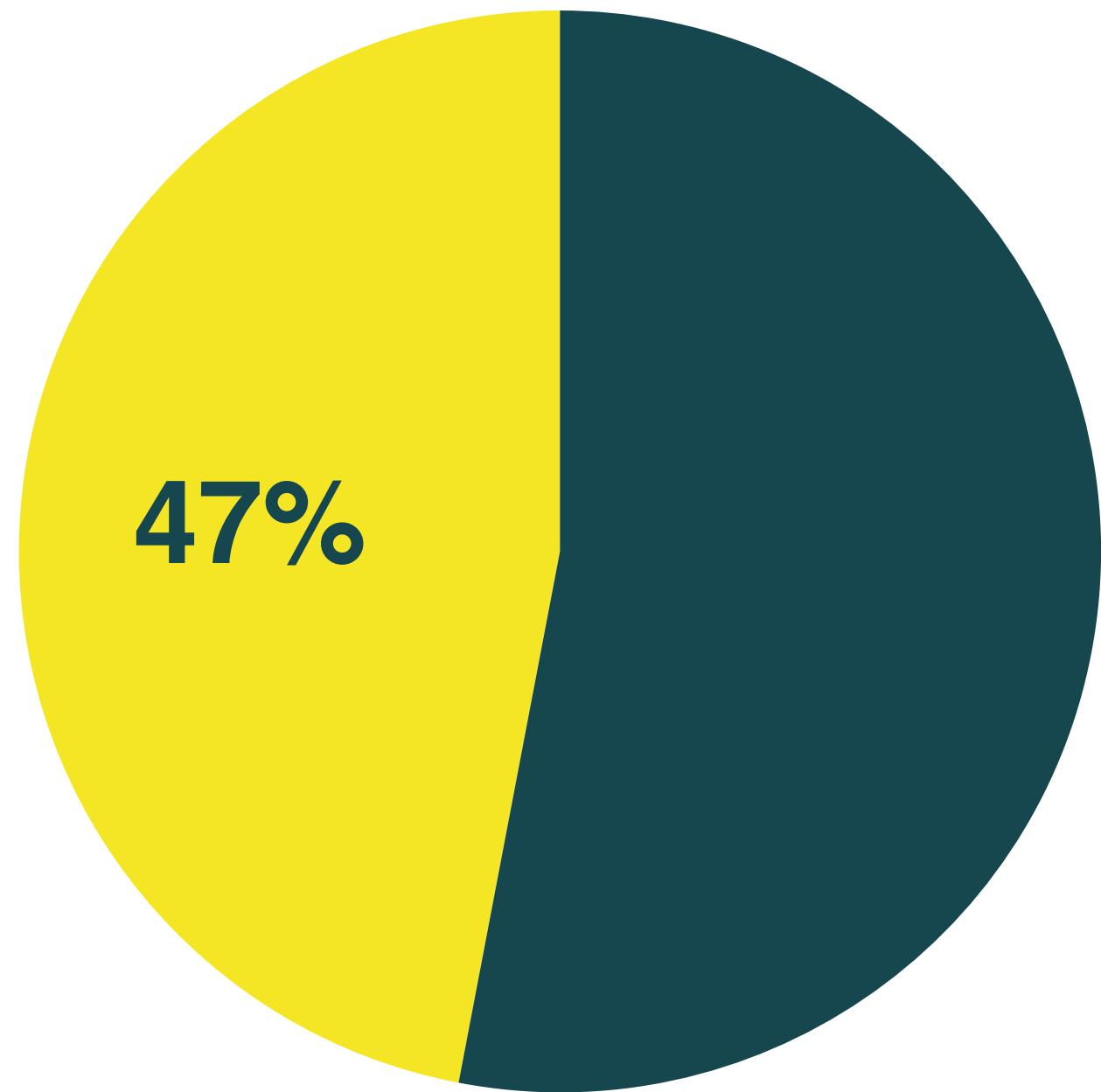
1 second delay in page load

↓ -7% conversion

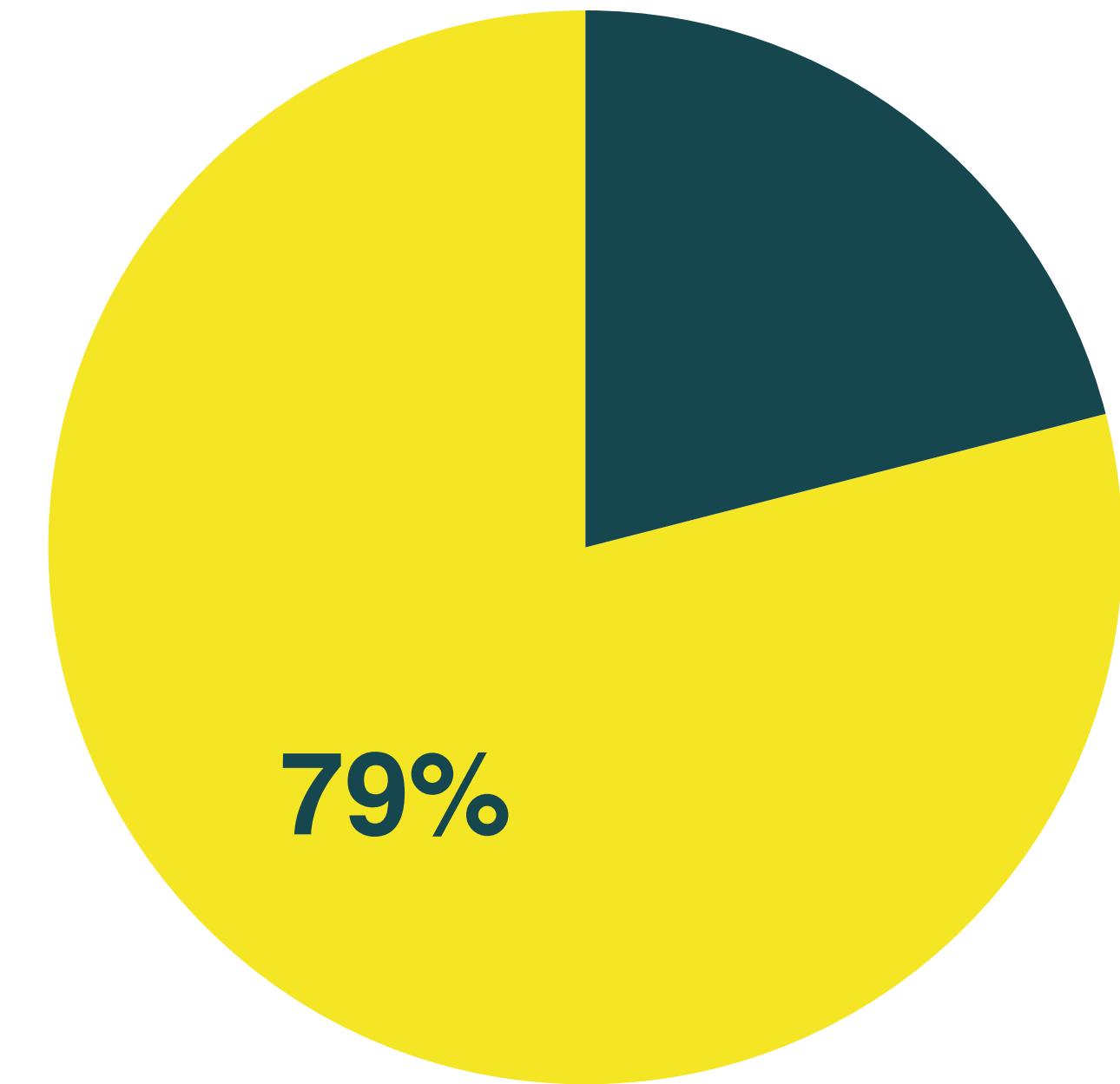
↓ -11% page views

↓ -16% satisfaction

HIGH EXPECTATIONS



47% of consumers expect a webpage to load within 2 seconds



79% of online shoppers will not return to a website after a disappointing experience due to poor performance

Fast websites have more visitors, who visit more pages, for longer period of times, who come back more often, and are more likely to buy

PERCEIVED PERFORMANCE



Perceived performance refers
to how fast a user thinks your
website is



Photo by Daniel Hong



Photo by Gloom

We already know how people
behave and we already solved
these problems before

Initial Content

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut tristique egestas ornare. Cras et quam sed risus fringilla tempus. Aenean in mauris enim. Cras et tempus est. Donec eros dui, commodo vel volutpat non, tempus et mi. Nam ac rutrum mi. Vestibulum luctus mauris eu pulvinar dapibus.

Aliquam viverra nunc non augue cursus faucibus. Donec mollis, dui at imperdiet varius, tellus tellus ultricies leo, sed consectetur nisl eros non orci. Ut augue lacus, placerat eget posuere ut, tincidunt ut dui.

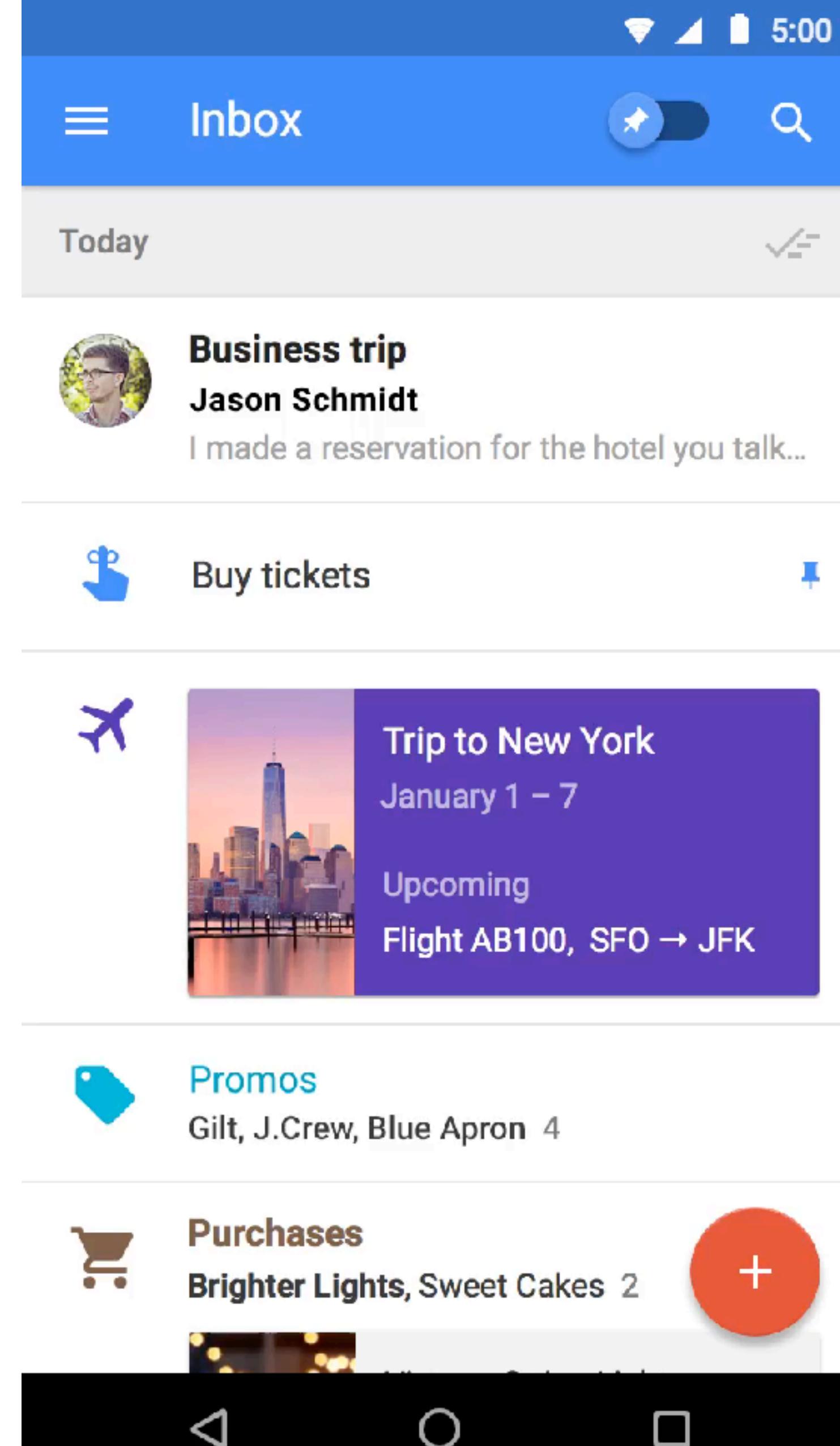
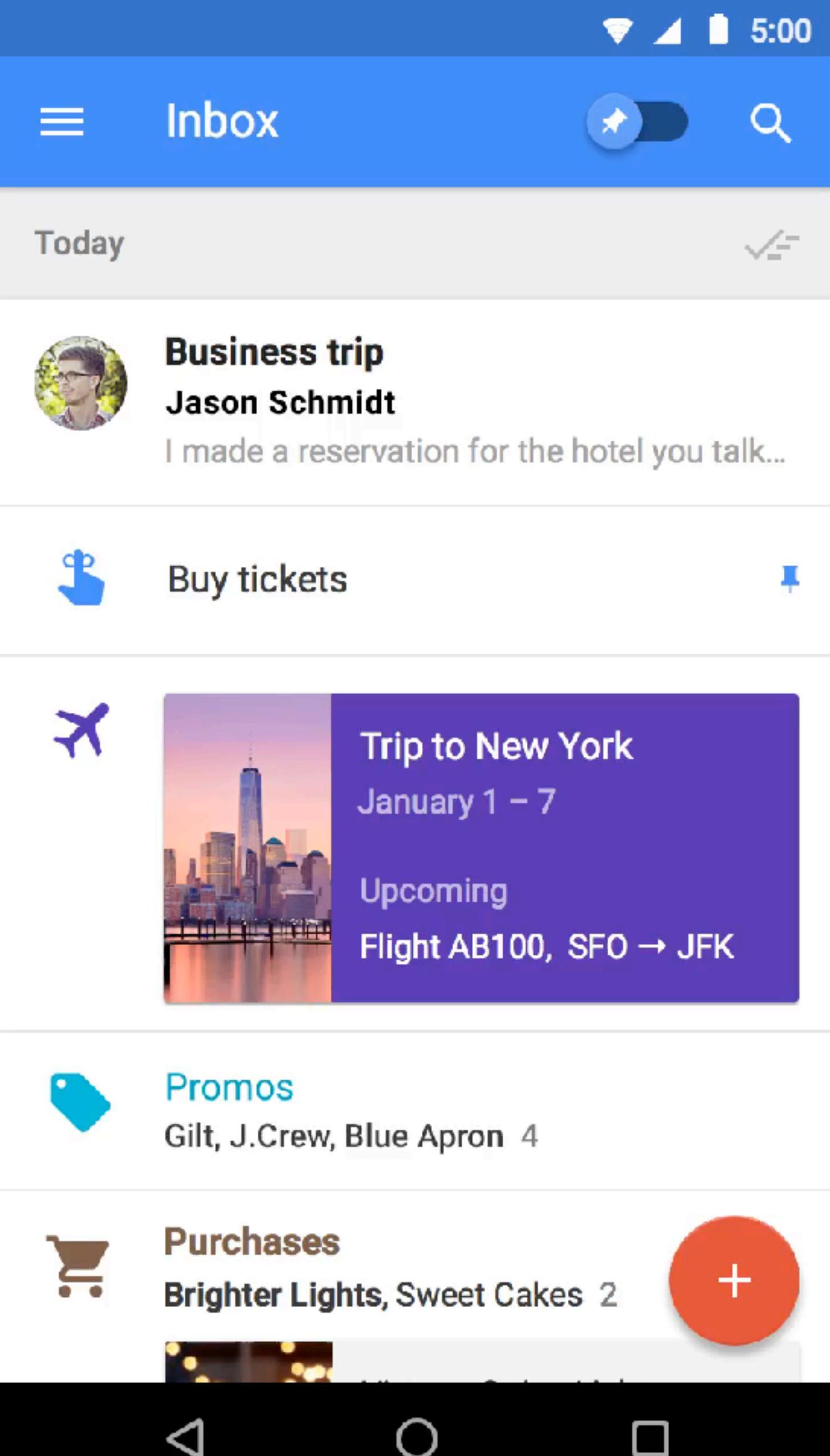
Aenean in mauris enim. Cras et tempus est. Donec eros dui.

Initial Content

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut tristique egestas ornare. Cras et quam sed risus fringilla tempus. Aenean in mauris enim. Cras et tempus est. Donec eros dui, commodo vel volutpat non, tempus et mi. Nam ac rutrum mi. Vestibulum luctus mauris eu pulvinar dapibus.

Aliquam viverra nunc non augue cursus faucibus. Donec mollis, dui at imperdiet varius, tellus tellus ultricies leo, sed consectetur nisl eros non orci. Ut augue lacus, placerat eget posuere ut, tincidunt ut dui.

Aenean in mauris enim. Cras et tempus est. Donec eros dui.



Motion material

HOW FAST IS FAST ENOUGH?

100ms = Instantaneous

1 second = Uninterrupted flow

DESIGN FOR PERFORMANCE



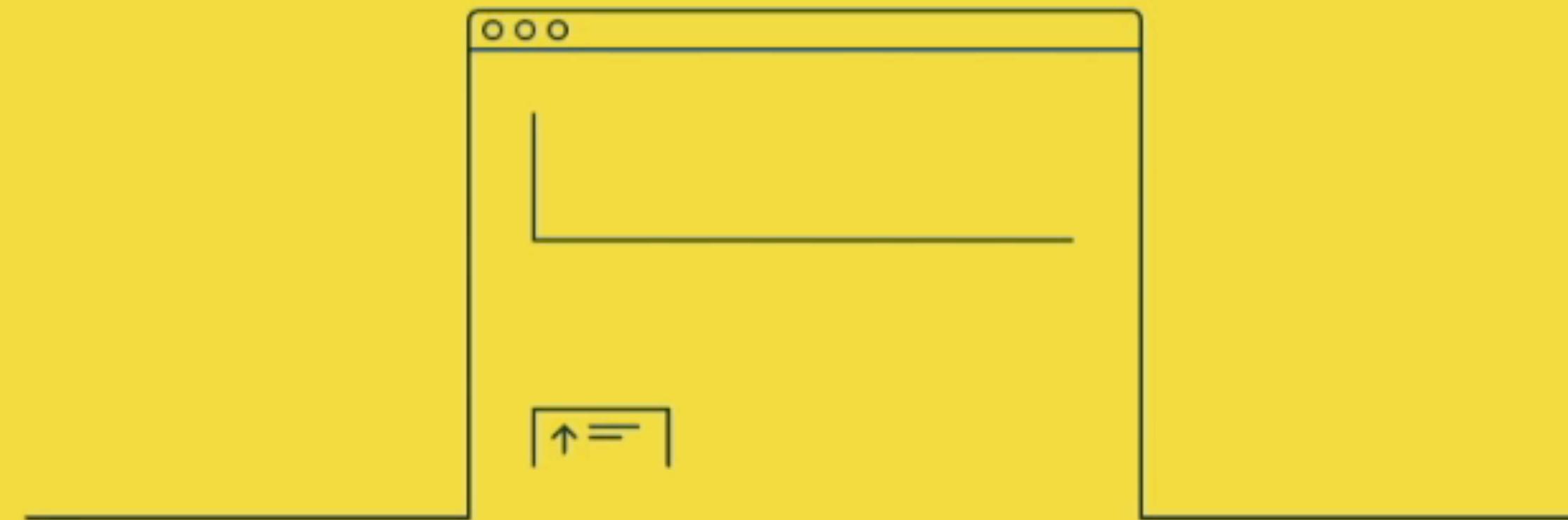
PERFORMANCE STARTS WITH DESIGN

- The message: Do you use text or images
- Colors & gradients: image format choice, transparency needs, number of sprites, how much CSS3
- Layout: impacts HTML hierarchy, number of classes, amount of CSS
- Typography: weight and number of font files

Make performance part of your
design workflow

Performance > Aesthetics

Content first



NPO Dashboard

Clear-cut insights in realtime visitor statistics



Within the Dutch Public Broadcasting (NPO) a project was started in 2015 to develop a number of pilots based on 'big data'. One of those pilots was the development of a dashboard for editorial staff to get **direct insight**



Portfolio

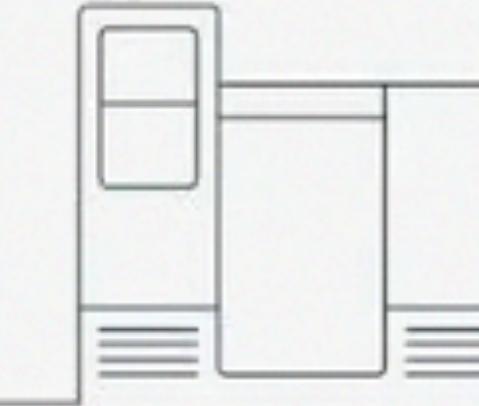
At De Voorhoeede we built web sites and apps for innovative start-ups, small businesses and large enterprises. These are the stories behind our projects.



A brand new Funda

The biggest, most responsive and modular website for real estate in the Netherlands

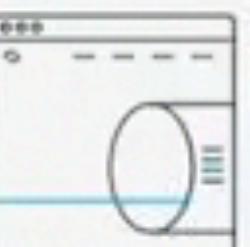
[Read more](#)



Drop & Fly

Self-service baggage drop-off with a web UI

[Read more](#)



Delft Hyperloop

The Tesla Roadster of websites

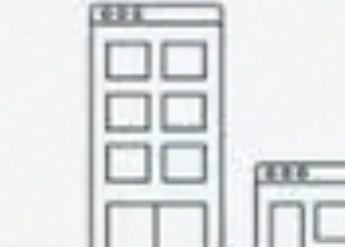
[Read more](#)



RTL Weekend Magazine

From app to web

[Read more](#)



Hotel- and Bungalow-Specials

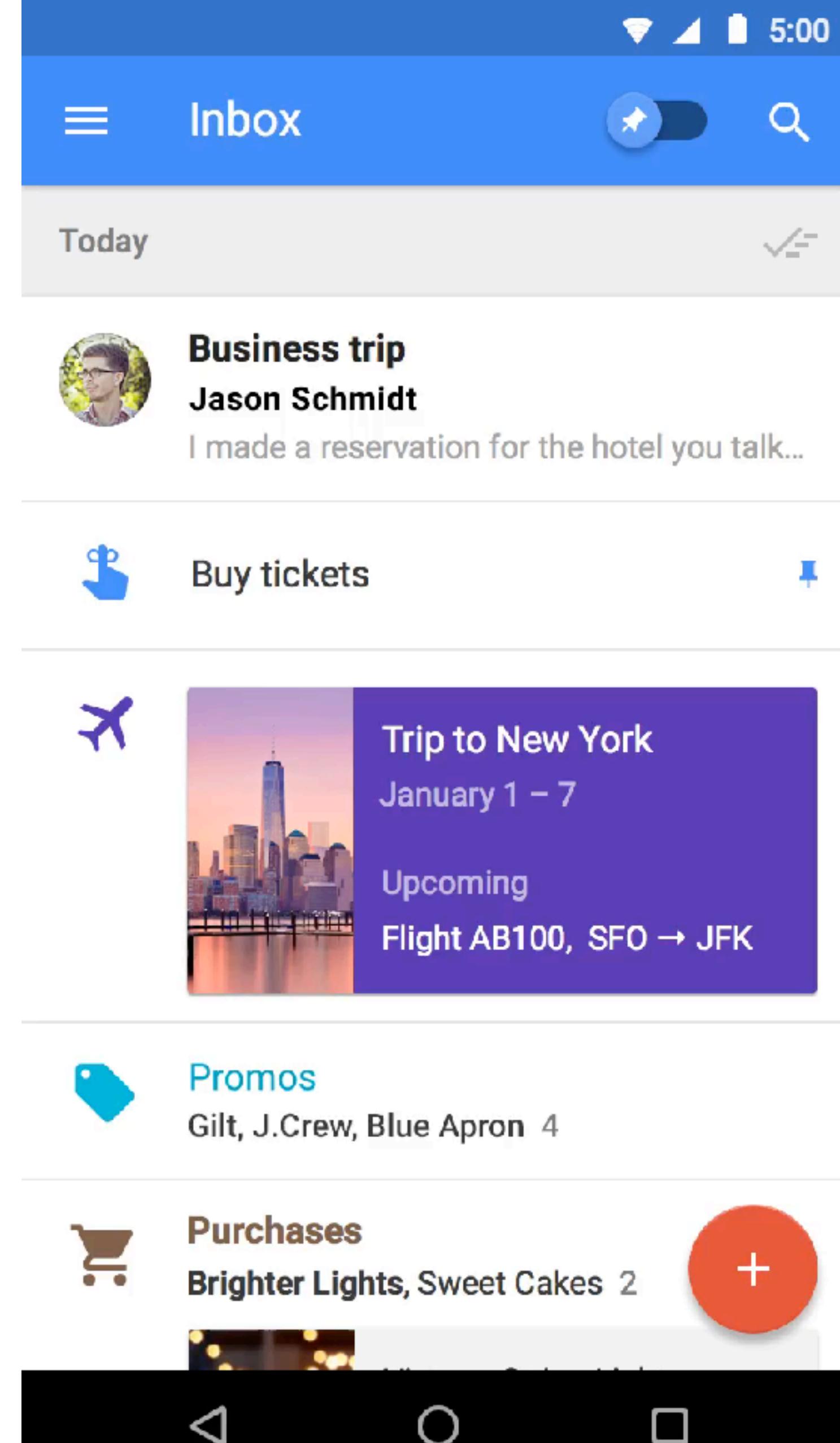
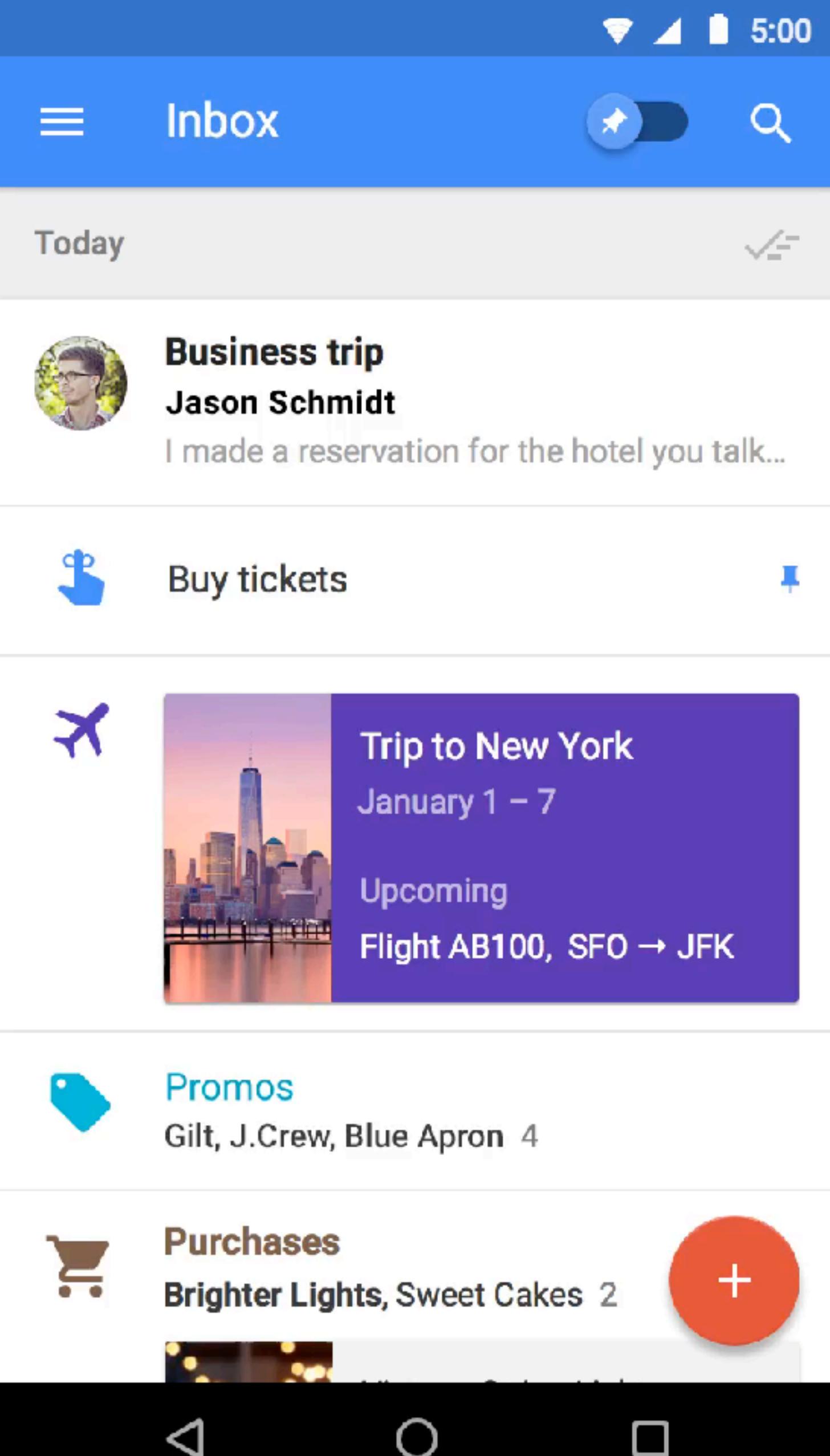
One new front-end for 10 European websites

[Read more](#)

"That yellow color makes me think of soviet-era low-income housing. It's the color you puke in if you eat a jar of mustard. It's sad and ugly all at once. I didn't realize you could pack that much sadness into a background-color"

—

snalin(reddit user)



Motion material

A HTTP REQUEST



LEGACY



The screenshot shows a browser window displaying the "The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents." page. The browser's developer tools Network tab is open, showing a single request for "TheProject.html" with a total duration of 746 ms. The request is a GET method with status 200, type document, and initiator Other. The page content includes links to various W3 resources like "What's out there?", "Help", "Software Products", "Technical", "Bibliography", "People", "History", "How can I help?", and "Getting code".



Help Contact Français Inloggen

Kies categorie ▾

Uw zoekopdracht



Zoek Geavanceerd

Antiek & Art

Audio, Video & TV

Auto's

Auto-onderdelen

Beauty & Gezondheid

Bestelwagens & Vrachtwagens

Bijoux & Horloges

Boeken & Strips

Boten

Bouw

Brommers & Scooters

Business & Industrie

Caravans & Kamperen

CD & Vinyl

Computer & Game Consoles

Dieren & Toebehoren

DVD & Video

Elektronische apparatuur

Fietsen

Foto & Camera

Hobby

Huis & Meubelen

Immo

Jobs & Diensten

Keuk

Kind

Kledi

Nieuwste zoekertjes

muziek en activiteitenspel

€ 15,00



17" originele Mini originele 17" Mini

€ 350,00



mooie jurken goede staat

€ 8,00



speciaal kleedje "Blathine"

€ 40,00



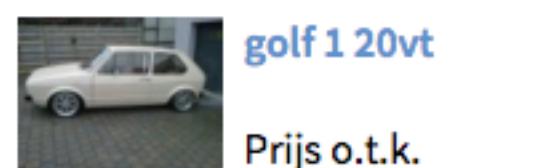
Fisher Price loopwagentje

€ 13,00

[Toon meer >](#)**Populairste zoekertjes**

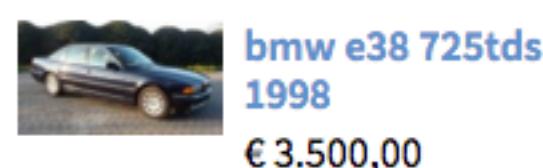
spoon ek k20 240-260pk!!!

€ 15.000,00



golf 1 20vt

Prijs o.t.k.



bmw e38 725tds 1998

€ 3.500,00

Auto's

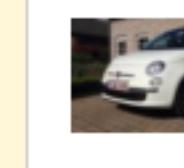
VOLVO XC 60 2.0 D3(136) met slechts

€ 27.900,00



V.W Passat 2.0 CR TDi Highline BMT

€ 16.900,00



Fiat 500 1.2 met garantie!!! 6maand

€ 10.499,00



audi a6 3.0 tdi quattro full option

€ 6.999,00

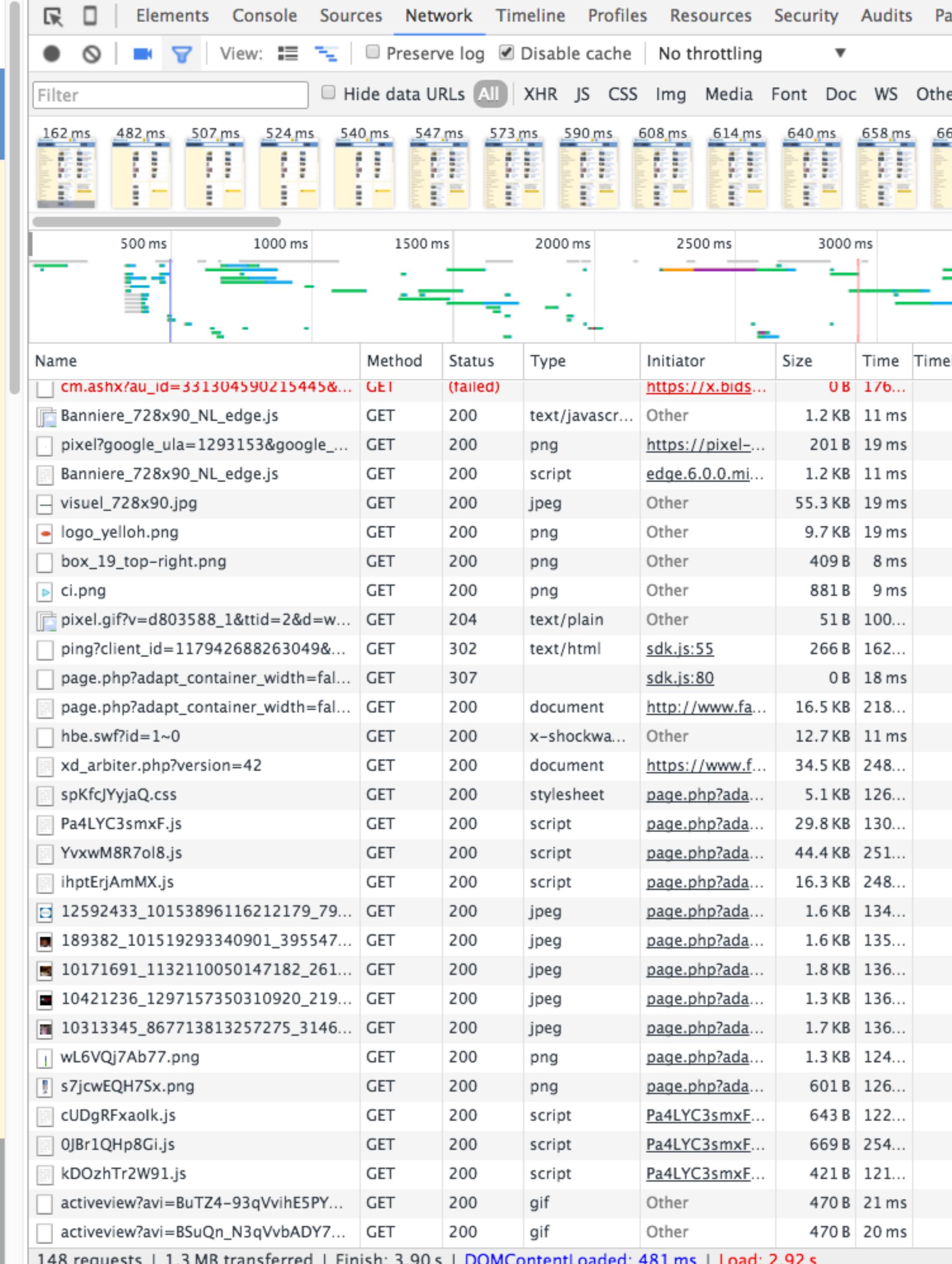


Opel Combo 1.3Cdti 139.000km

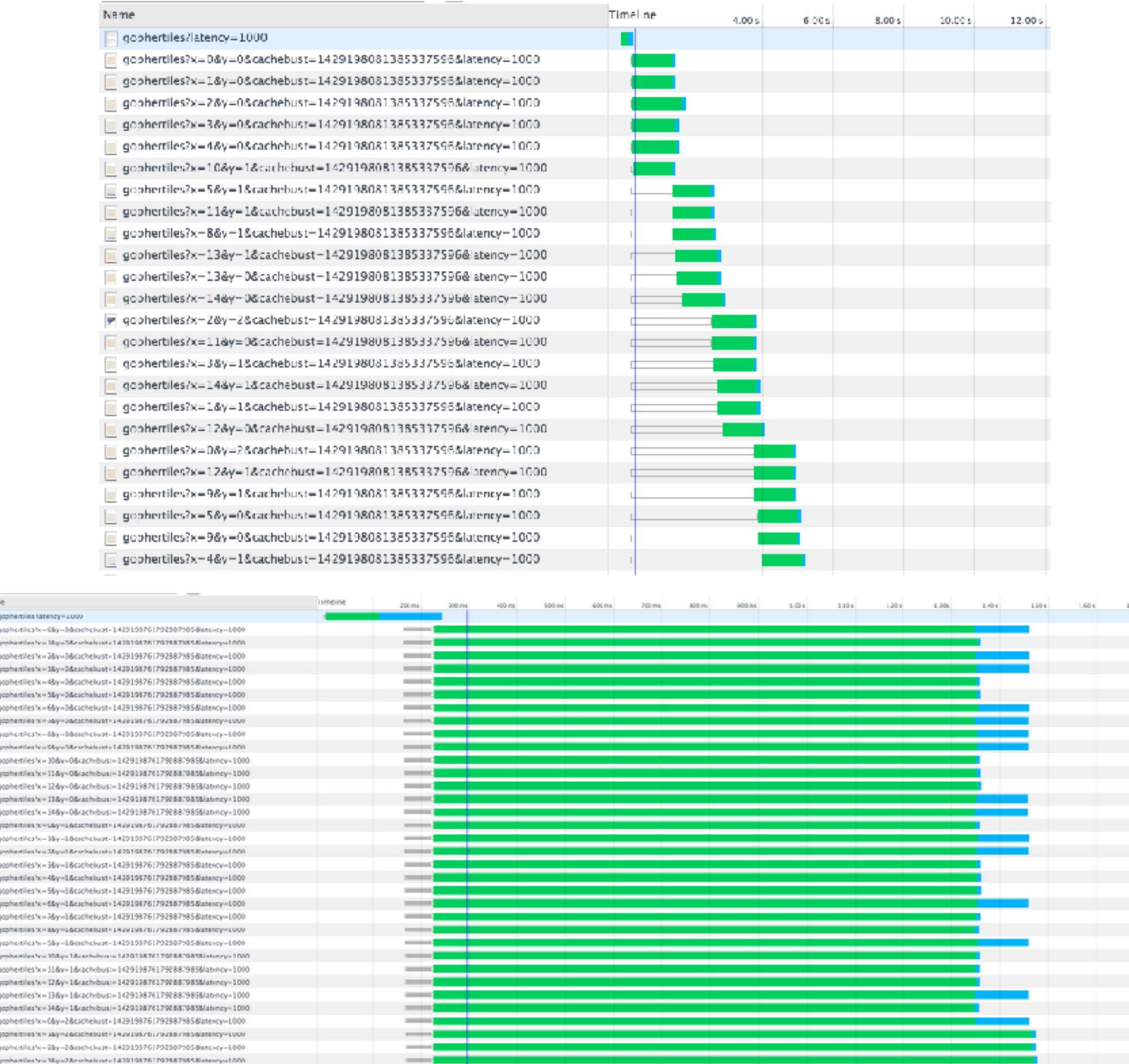
€ 4.950,00

[Toon meer >](#)

Heeft u zelf spullen die u niet meer gebruikt? Zet ze op 2dehands.be, de grootste zoekertjessite van België!

 [Plaats gratis zoekertje](#)

HTTP2

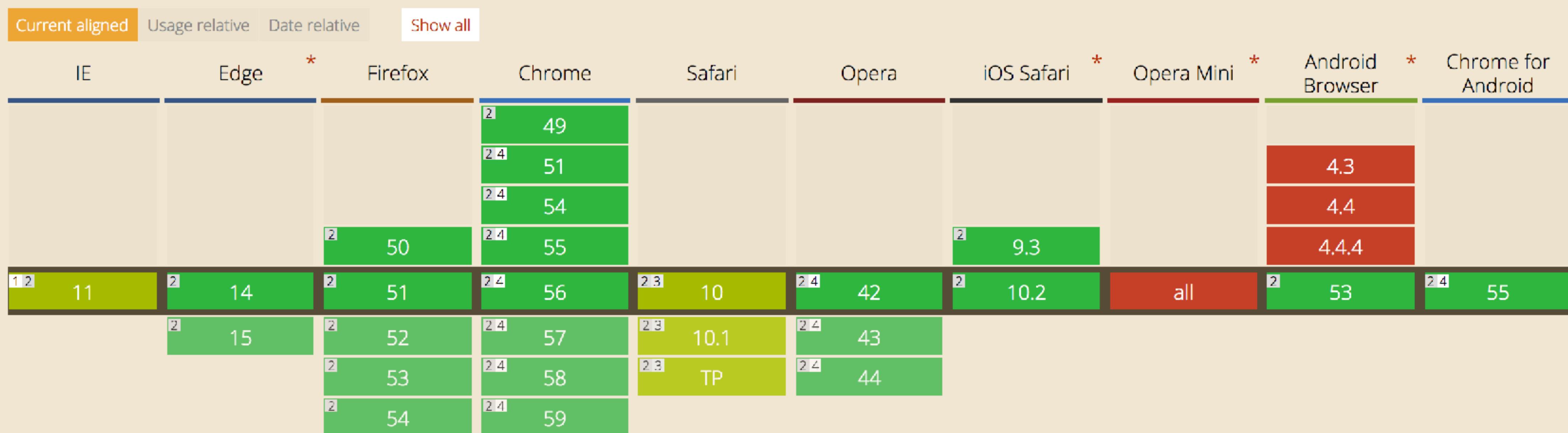


[http1 vs http2 loading](#)

HTTP/2

HTTP/2 protocol  - OTHER Global 72.6% + 5.5% = 78.1%

Networking protocol for low-latency transport of content over the web. Originally started out from the SPDY protocol, now standardized as HTTP version 2.

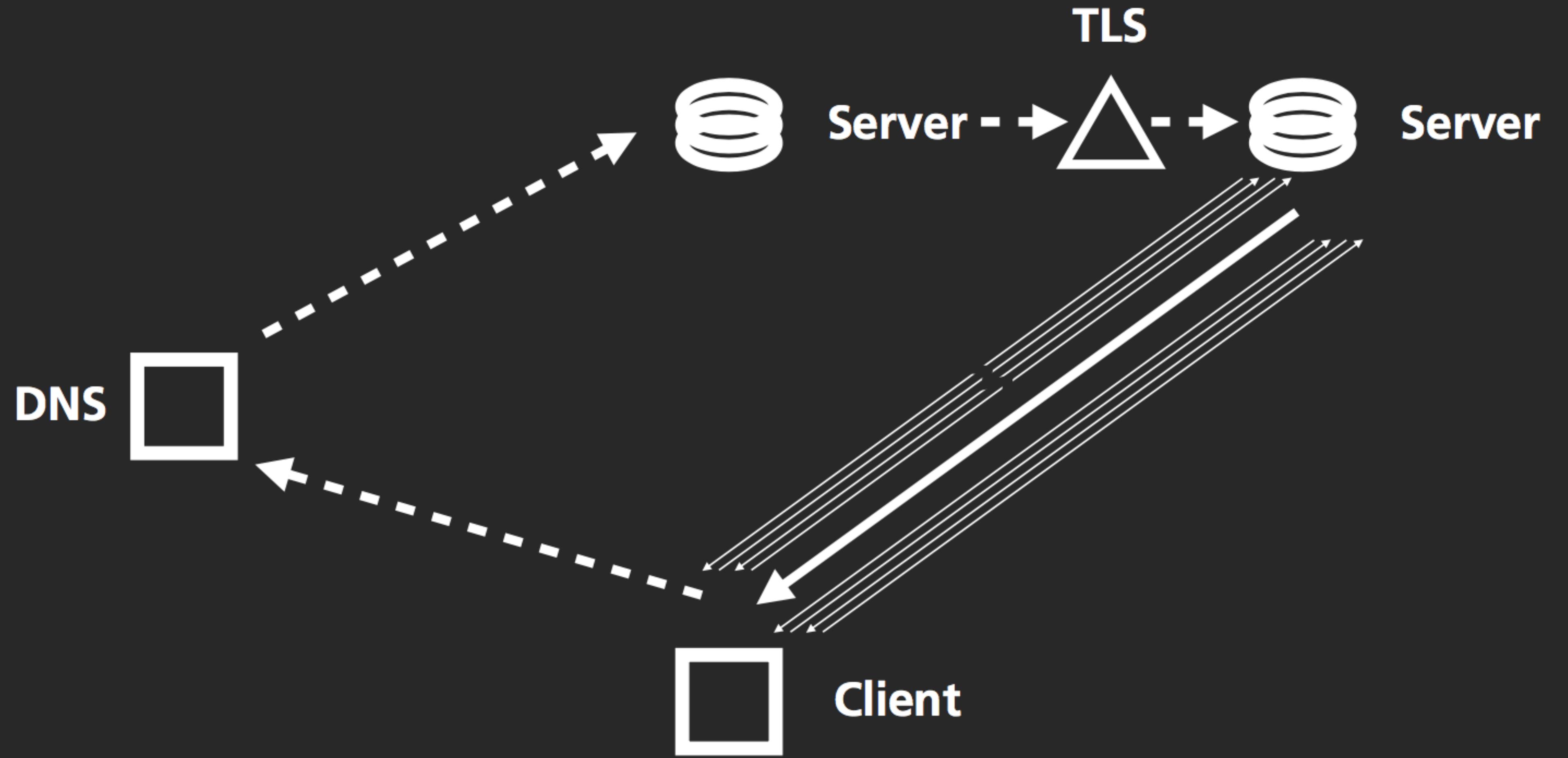


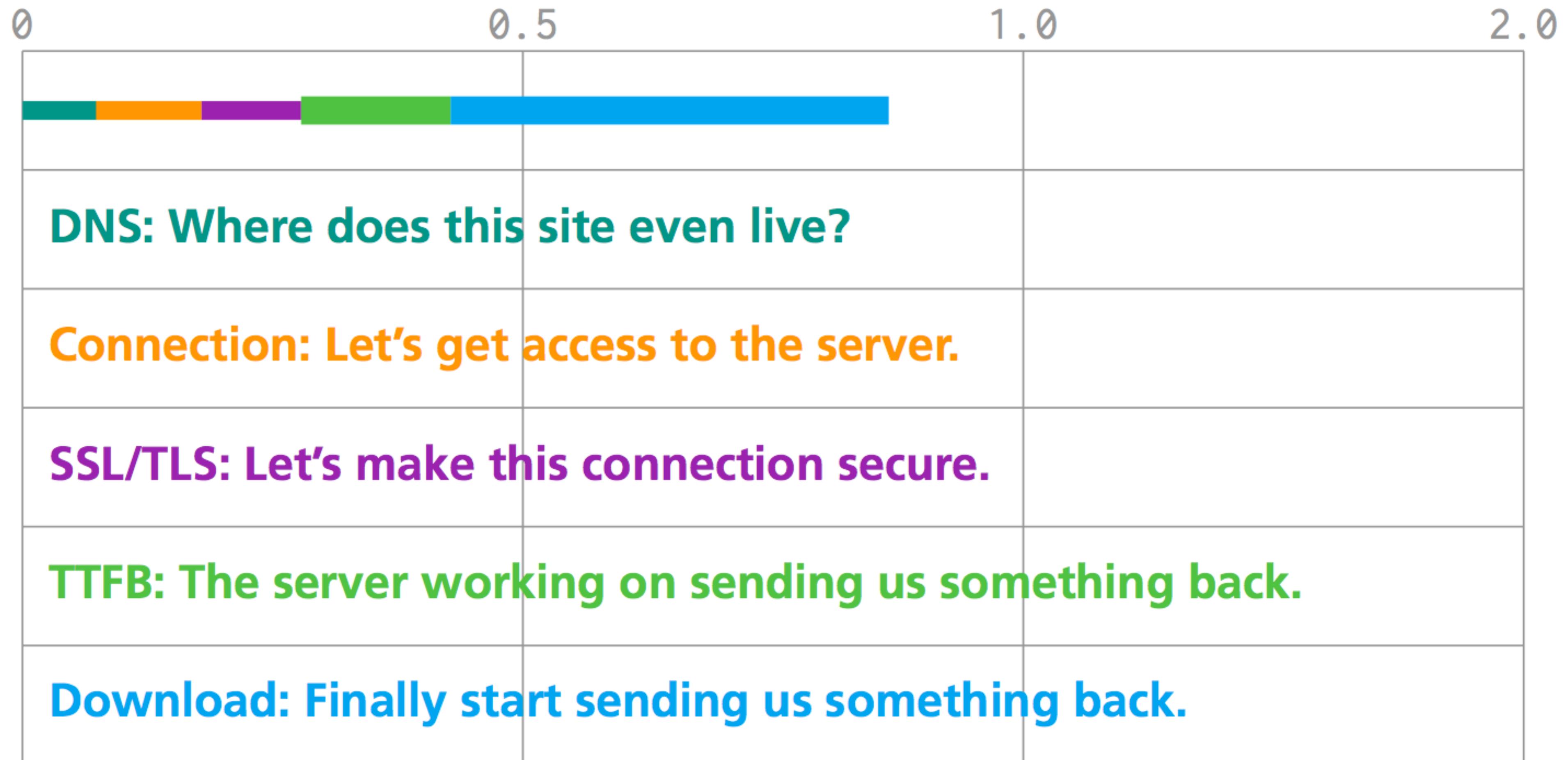
sooooo?

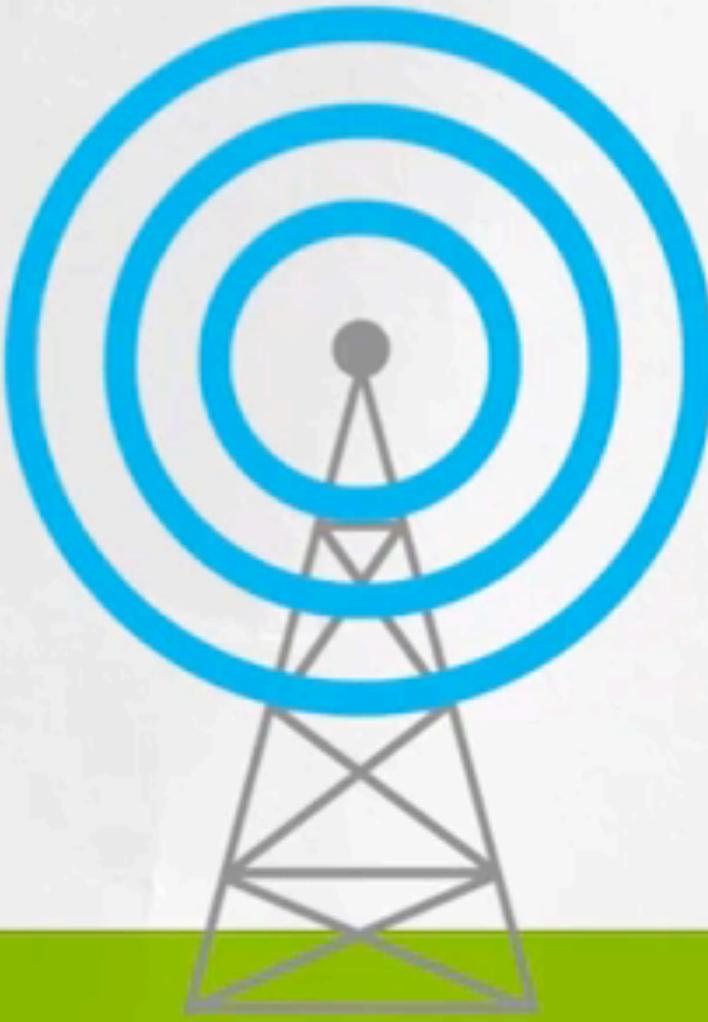
- Concatenating
- Icon fonts
- Inline CSS, JS and data URI's
- Domain sharding

STILL

- optimise filesize
- prevent unnecessary requests
- CDN use
- feature detection, progressive enhancement







TOOLING



PAGESPEED INSIGHTS

PageSpeed Tools > Insights

GUIDES REFERENCE SAMPLES SUPPORT

PageSpeed Insights

ANALYZE

Mobile Desktop

58 / 100 Suggestions Summary

! Should Fix:

- Optimize images
 - ↳ Show how to fix
- Eliminate render-blocking JavaScript and CSS in above-the-fold content
 - ↳ Show how to fix
- Leverage browser caching
 - ↳ Show how to fix

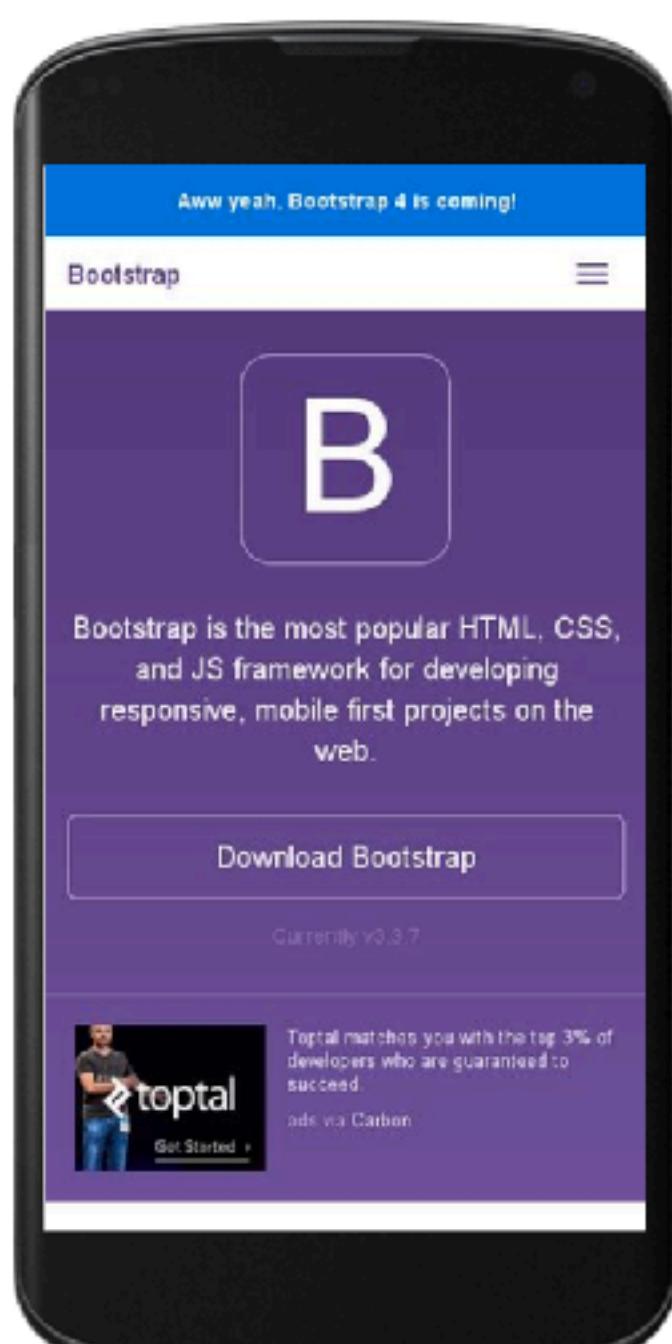
! Consider Fixing:

- Minify JavaScript
 - ↳ Show how to fix

✓ 6 Passed Rules

- ↳ Show details

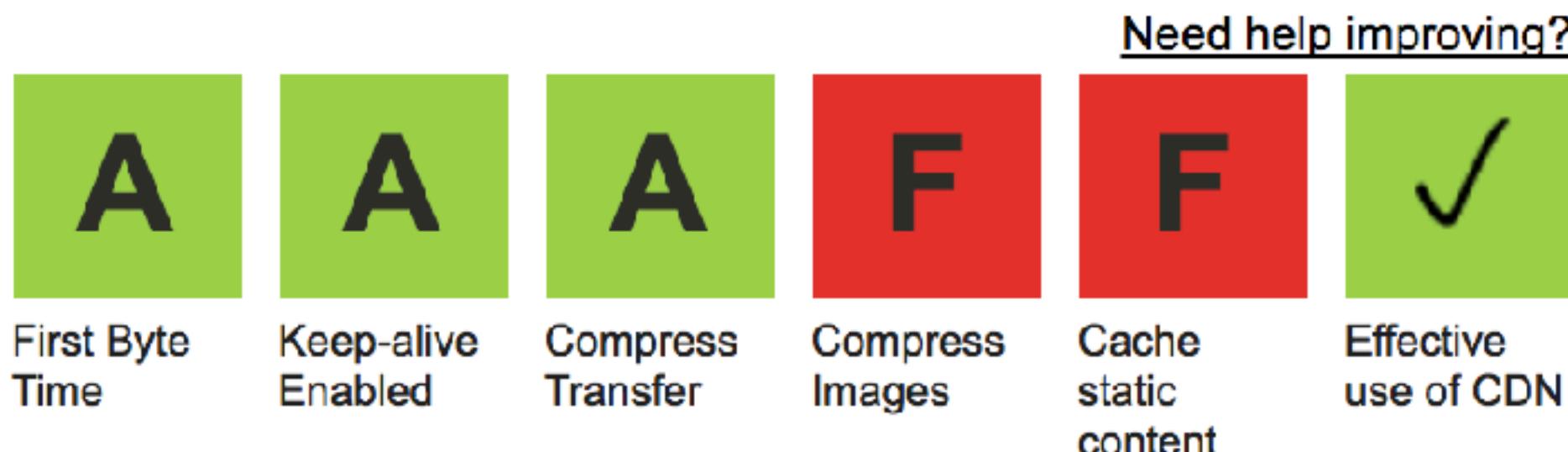
Download optimized image, JavaScript, and CSS resources for this page.



WEBPAGETEST

Web Page Performance Test for getbootstrap.com

From: Amsterdam, NL - IISpeed - Chrome - Cable
26/01/2017, 21:22:40



[Summary](#) [Details](#) [Performance Review](#) [Content Breakdown](#) [Domains](#) [Processing Breakdown](#) [Screen Shot](#)

Tester: VPS16230-93.191.133.233

Test runs: 5

[Re-run the test](#)

[Raw page data](#) - [Raw object data](#)

[Export HTTP Archive \(.har\)](#)

[View Test Log](#)

Performance Results (Median Run)

	Load Time	First Byte	Start Render	Speed Index	DOM Elements	Document Complete			Fully Loaded				
						Time	Requests	Bytes In	Time	Requests	Bytes In	Certificates	Cost
First View (Run 3)	2.950s	0.452s	0.812s	866	155	2.950s	25	884 KB	3.013s	26	886 KB	16 KB	\$---
Repeat View (Run 4)	0.837s	0.572s	-	0	153	0.837s	4	10 KB	0.837s	4	10 KB	3 KB	

2.0s

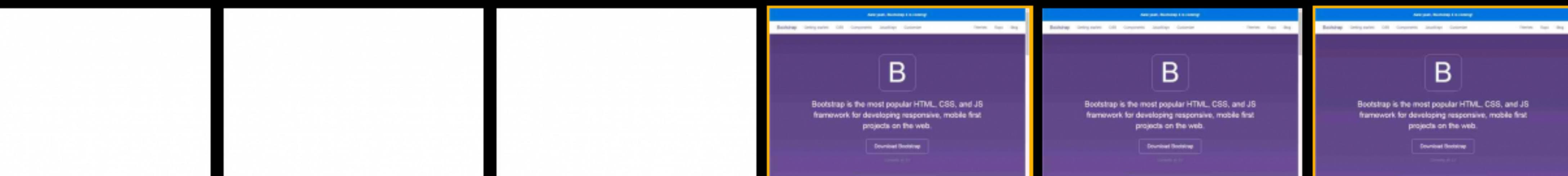
2.5s

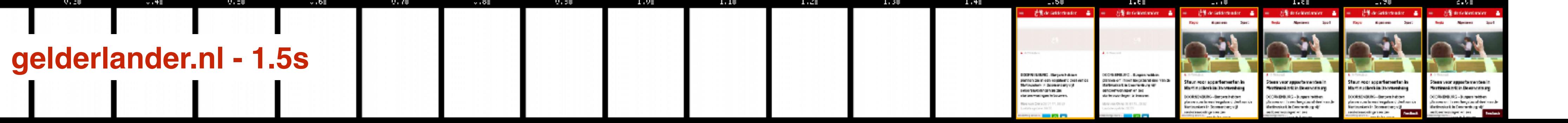
3.0s

3.5s

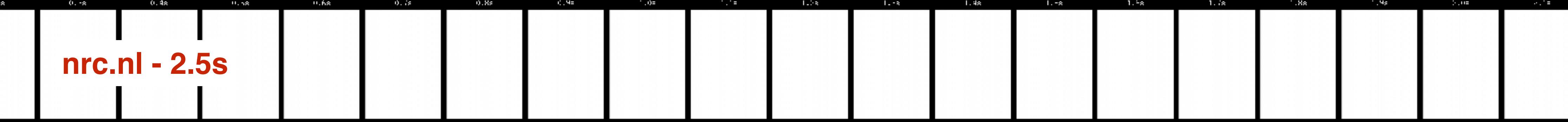
4.0s

4.5s





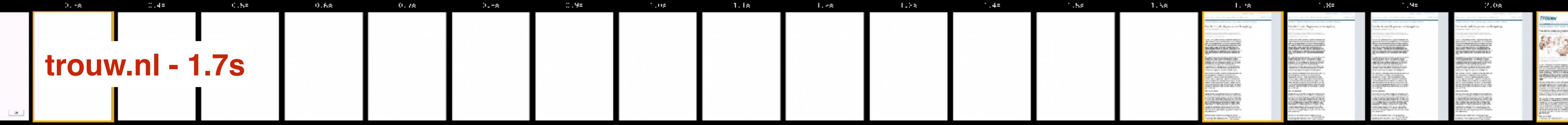
gelderlander.nl - 1.5s



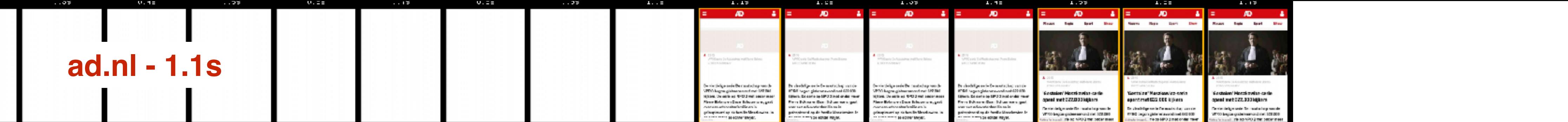
nrc.nl - 2.5s



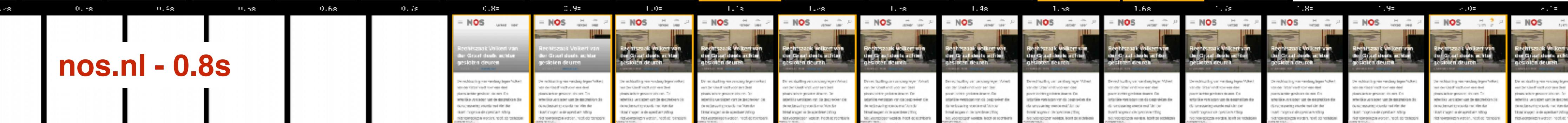
fd.nl - 1.2s



trouw.nl - 1.7s



ad.nl - 1.1s



nos.nl - 0.8s



beta.hln.be - 0.7s



beta.trouw.nl - 0.6s

CHROME DEV TOOLS

The screenshot shows a browser window with the URL `localhost:3003`. The main content area displays a purple Bootstrap landing page with a large white 'B' icon and text about Bootstrap's popularity and download information. The browser's address bar also shows `localhost:3003`. To the right of the browser window is the Chrome Dev Tools interface, specifically the Network tab. The Network tab displays a timeline of network requests. At the top of the timeline, there is a summary of request times: 1.72s, 1.85s, 1.92s, 2.13s, 2.98s, 3.00s, 3.14s, 3.22s, 4.14s, 4.19s, and 4.30s. Below this is a grid of small thumbnail images representing the resources loaded. The main timeline shows several requests, with most of them taking between 1.56s and 4.06s to complete. The requests listed in the table below include:

Name	M...	Status	Protocol	Type	Initiator	Size	Time	Content...	Timeline – Start Time	3.00s	4.00s	5.00s
localhost	GET	200 OK	http/1.1	doc...	Other	9.4KB 9.1KB	91ms 45ms					
bootstrap.css /dist/css	GET	200 OK	http/1.1	style...	(inde... Parser	144KB 143KB	1.56s 43ms					
docs.css /assets/css/src	GET	200 OK	http/1.1	style...	(inde... Parser	30.6KB 30.3KB	410ms 51ms					
sass-less.png /assets/img	GET	200 OK	http/1.1	png	(inde... Parser	14.4KB 14.2KB	450ms 67ms					
devices.png /assets/img	GET	200 OK	http/1.1	png	(inde... Parser	6.7KB 6.5KB	244ms 75ms					
components.png /assets/img	GET	200 OK	http/1.1	png	(inde... Parser	3.1KB 2.9KB	167ms 82ms					
expo-lyft.jpg /assets/img	GET	200 OK	http/1.1	jpeg	(inde... Parser	156KB 156KB	4.06s 91ms					
expo-vogue.jpg /assets/img	GET	200 OK	http/1.1	jpeg	(inde... Parser	194KB 194KB	4.48s 84ms					
expo-riot.jpg /assets/img	GET	200 OK	http/1.1	jpeg	(inde... Parser	158KB 158KB	3.97s 84ms					
expo-newsweek.jpg /assets/img	GET	200 OK	http/1.1	jpeg	(inde... Parser	197KB 197KB	3.52s 83ms					

At the bottom of the Network tab, the status bar shows: 18 requests | 1.2MB transferred | Finish: 6.62s | DOMContentLoaded: 3.13s | Load: 6.62s.

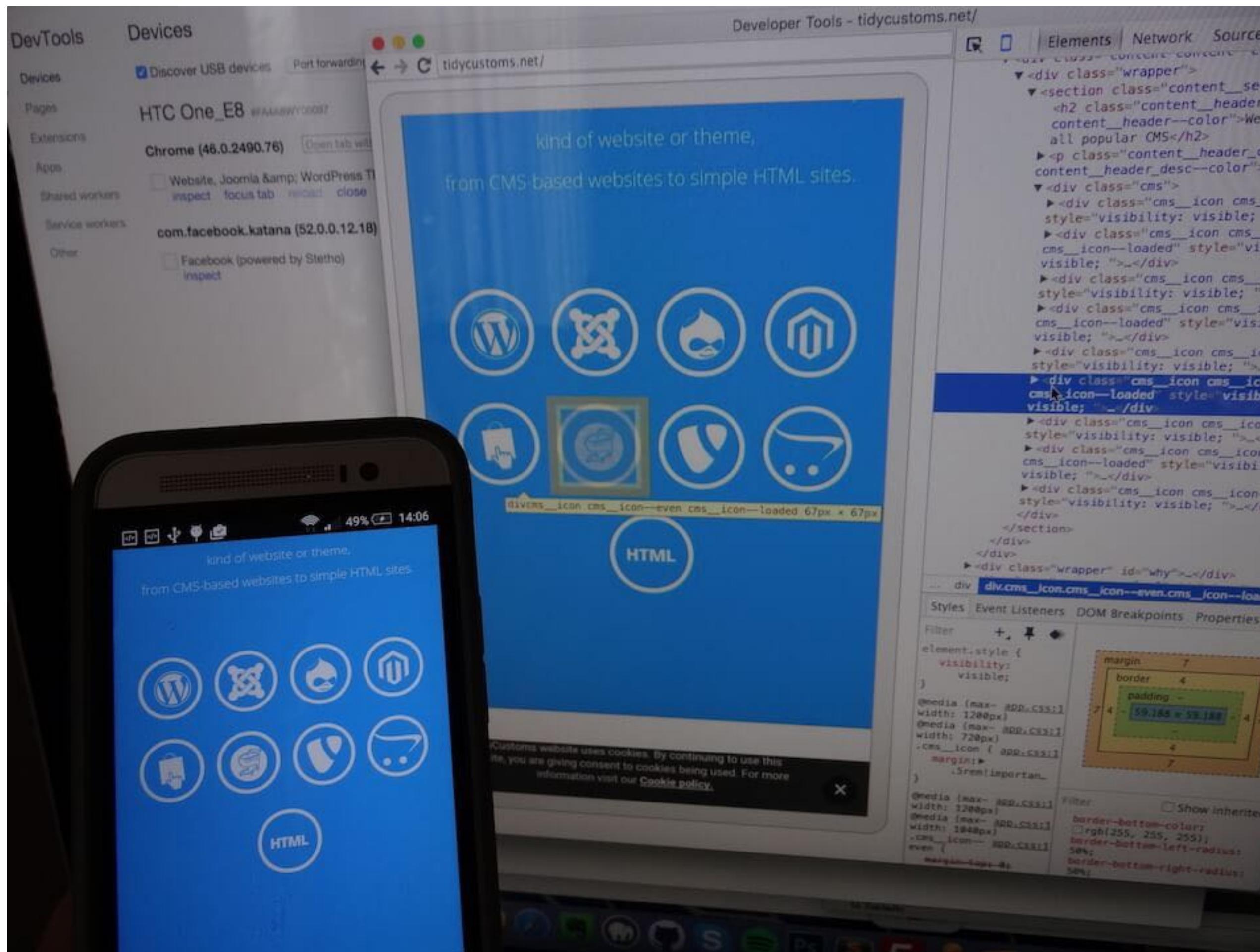
CHROME AUDITS

The screenshot shows the Chrome DevTools Audits panel. The top navigation bar includes Elements, Console, Sources, Network, Timeline, Profiles, Application, Security, Audits (which is selected), PageSpeed, and AdBlock. The left sidebar has sections for Audits, RESULTS, and a specific URL entry for <http://localhost:3003/>.

The main content area displays audit results:

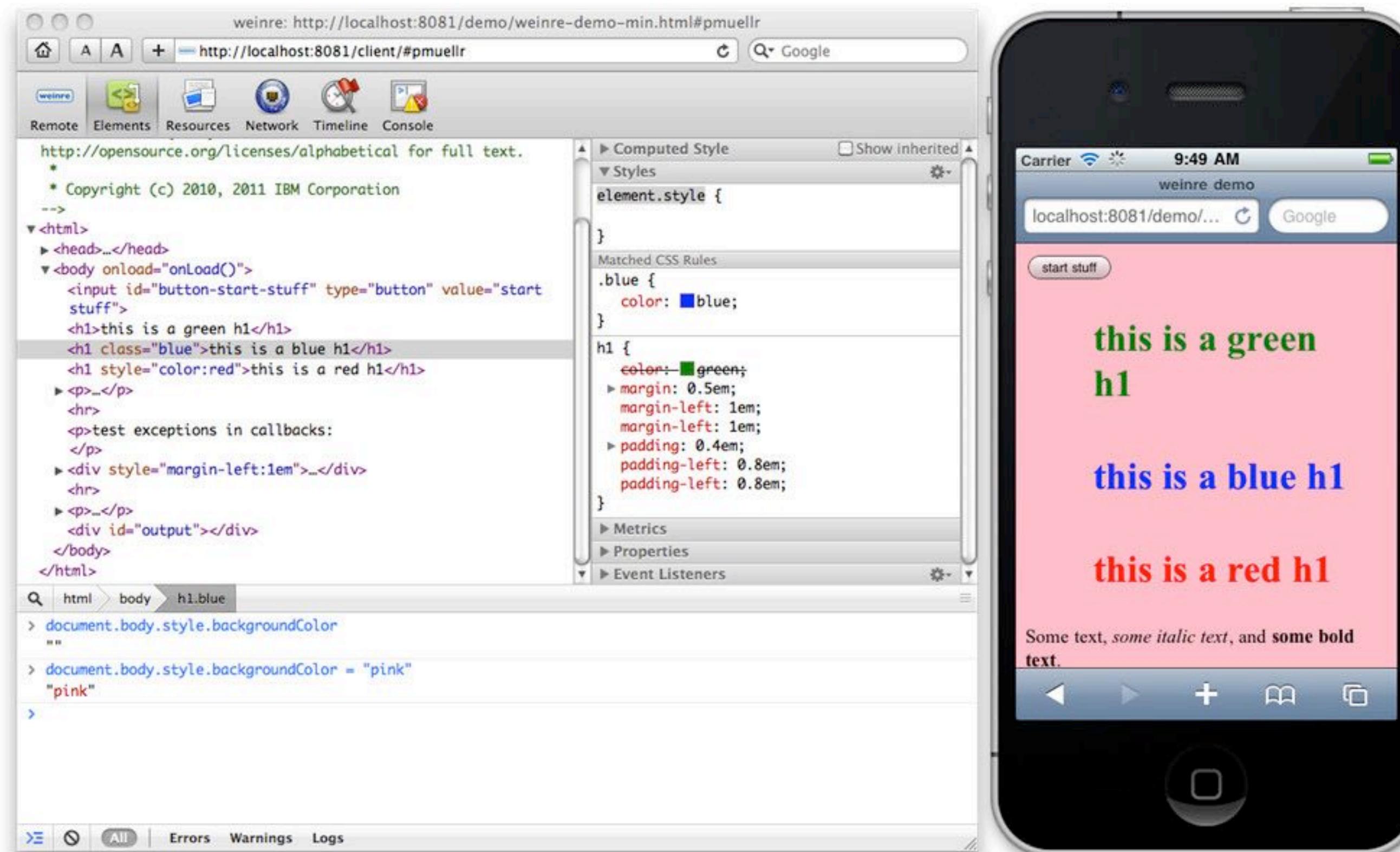
- Accessibility:**
 - [Warning] Text elements should have a reasonable contrast ratio (1)
 - [Warning] The purpose of each link should be clear from the link text (1)
 - [Warning] These elements are focusable but either invisible or obscured by another element (17)
 - Not applicable tests (10)
 - Passing tests (12)
- Network Utilization:**
 - Combine external JavaScript (4):** There are multiple resources served from same domain. Consider combining them into as few files as possible.
4 JavaScript resources served from localhost:
 - [localhost/](#) could save ~6.1KB
 - [bootstrap.css](#) could save ~95.6KB
 - [docs.css](#) could save ~20.2KB
 - [jquery.min.js](#) could save ~63.3KB
 - [bootstrap.min.js](#) could save ~24.1KB
 - [docs.min.js](#) could save ~30.7KB
 - [ie10-viewport-bug-workaround.js](#) could save ~427B
 - [Red dot] Leverage browser caching (18)
 - [Yellow dot] Minimize cookie size
 - [Yellow dot] Serve static content from a cookieless domain (9)
- Specify image dimensions (7):** A width and height should be specified for all images in order to speed up page display. The following image(s) are missing a width and/or height:
 - [sass-less.png](#)
 - [devices.png](#)
 - [components.png](#)
 - [expo-lyft.jpg](#)
 - [expo-vogue.jpg](#)
 - [expo-riot.jpg](#)
 - [expo-newsweek.jpg](#)
- Web Page Performance:**
 - [Yellow dot] Remove unused CSS rules (1566)
1566 rules (92%) of CSS not used by the current page.
 - [Yellow dot] [docs.css](#): 81% is not used by the current page.
 - [Yellow dot] [bootstrap.css](#): 94% is not used by the current page.

MOBILE DEBUGGING



[Inspecting and debugging mobile websites - Tidy Customs](#)

IOS DEBUGGING PROXY



iOS debugging proxy by Google

SPEED STRATEGY



We distinguish between **first view** and **repeat view**

**First view is about optimising
the first meaningful paint**

Repeat view is about
squashing bytes and caching
strategies

LOW HANGING FRUIT



MINIMIZE HTTP REQUESTS

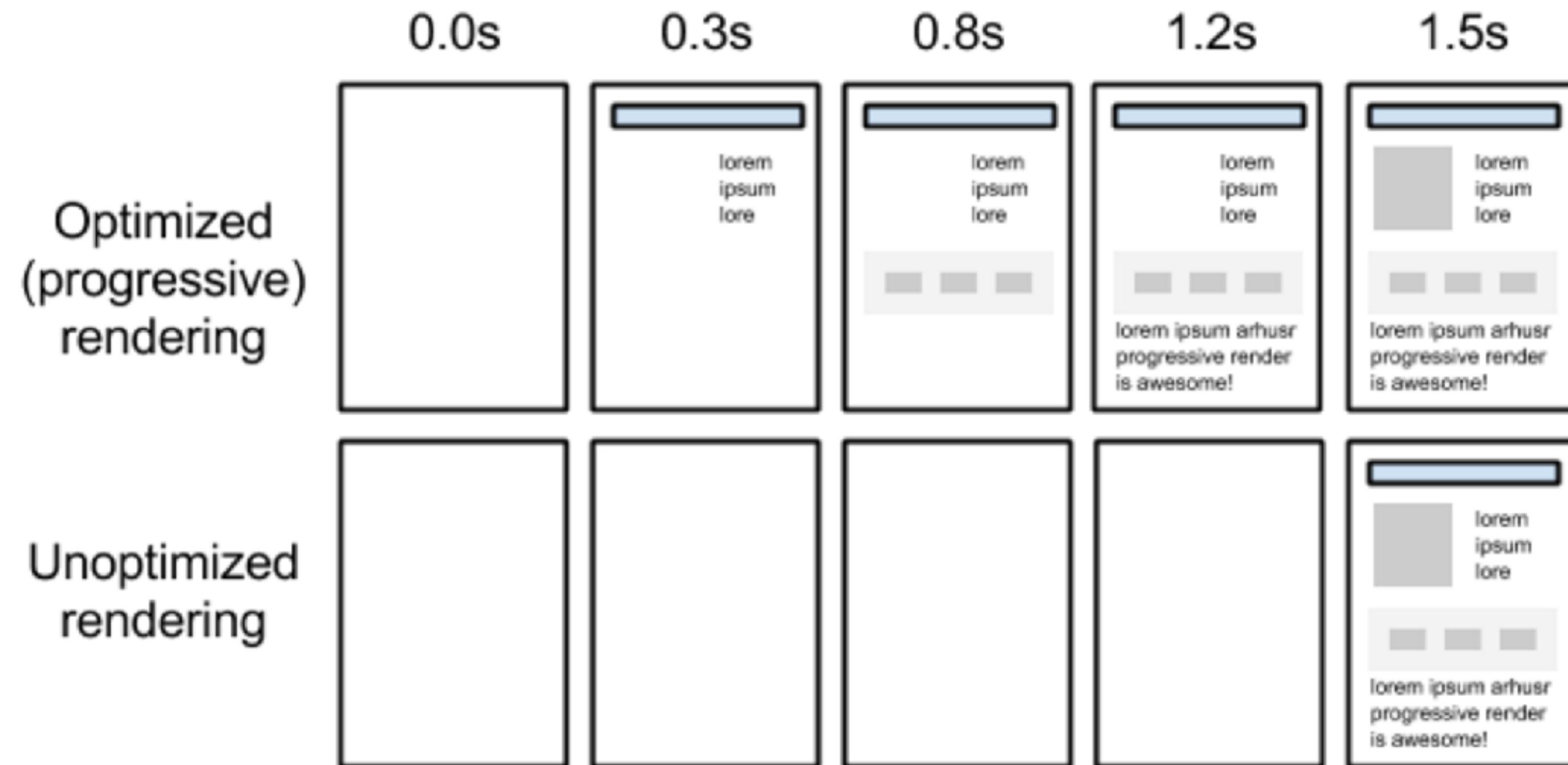
- Concatenate
- Inline images
- Image sprites
- Caching

MINIFY

- HTML
- CSS
- JS
- Images

CRITICAL RENDERING PATH

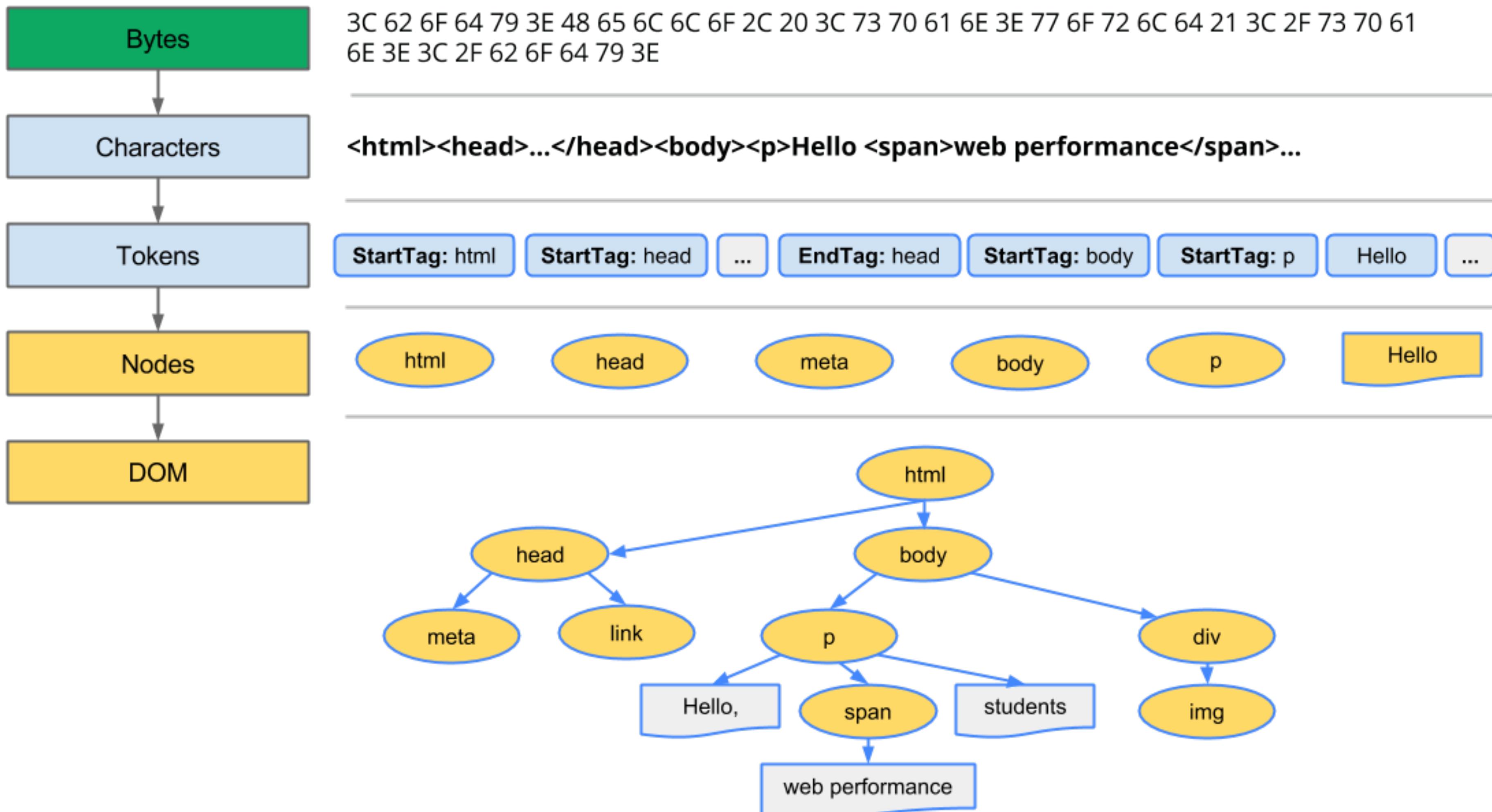




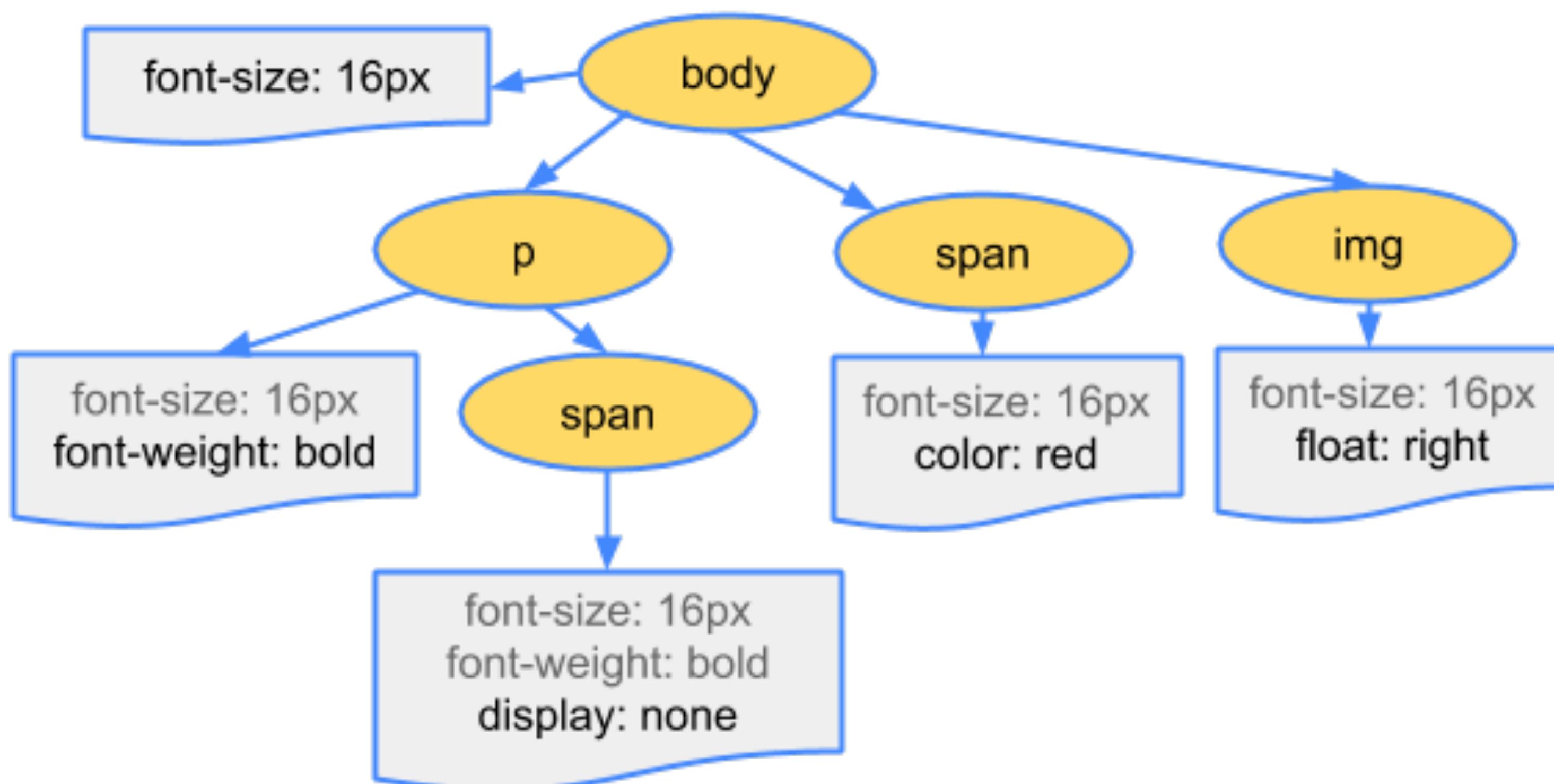
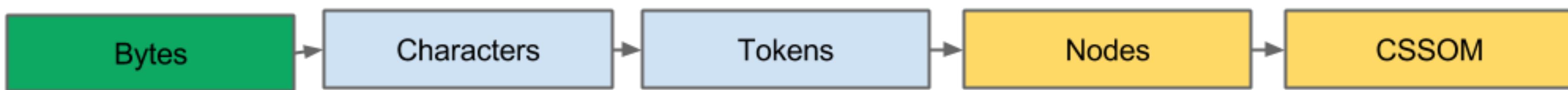
Critical rendering path

The sequence of steps the
browser goes through to
render a page

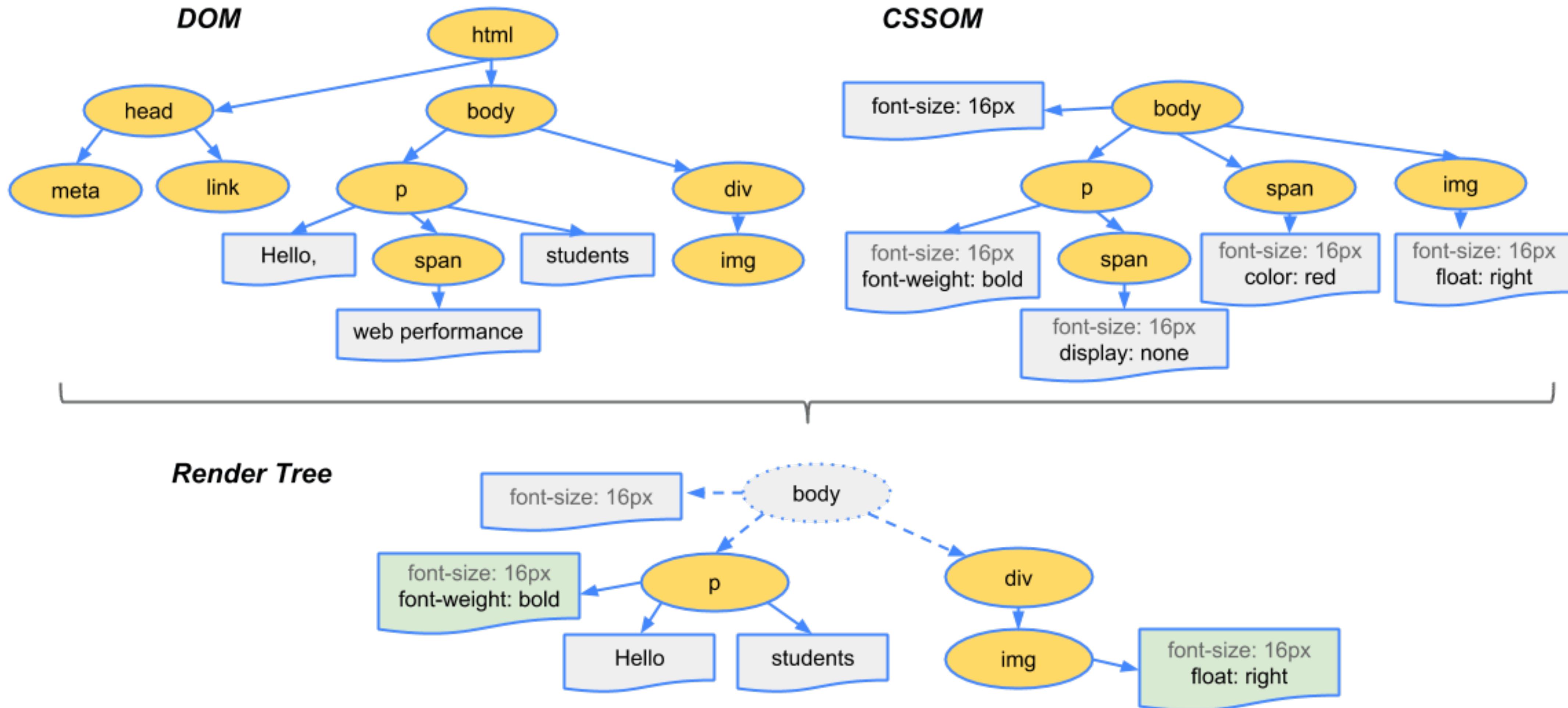
DOM



CSSOM



RENDER TREE CONSTRUCTION



RENDER TREE CONSTRUCTION

- Process HTML markup and **build the DOM tree**.
- Process CSS markup and **build the CSSOM tree**.
- **Combine** the DOM and CSSOM into a render tree.
- Run **layout** on the render tree to compute geometry of each node.
- **Paint** the individual nodes to the screen.

Optimizing the critical rendering path
is the process of **minimizing the total
amount of time** spent performing
these steps

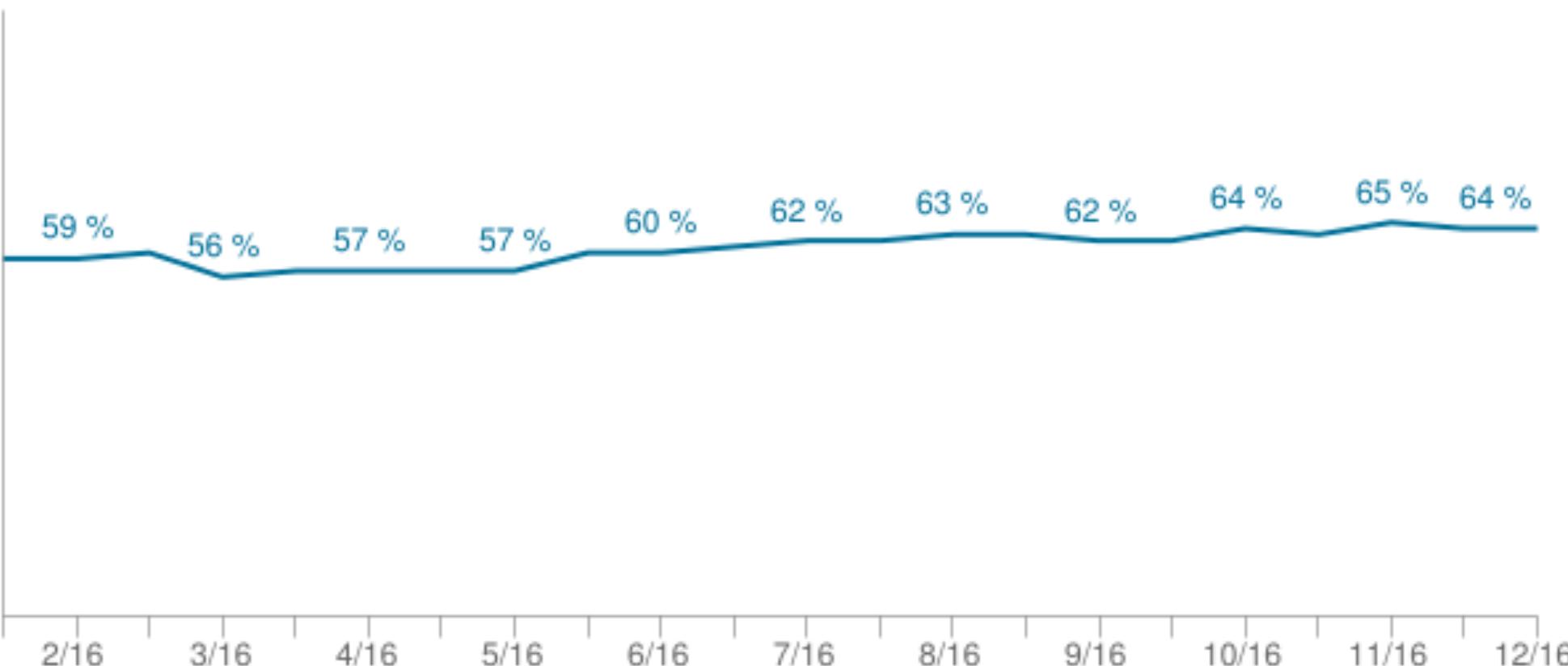
FONTS



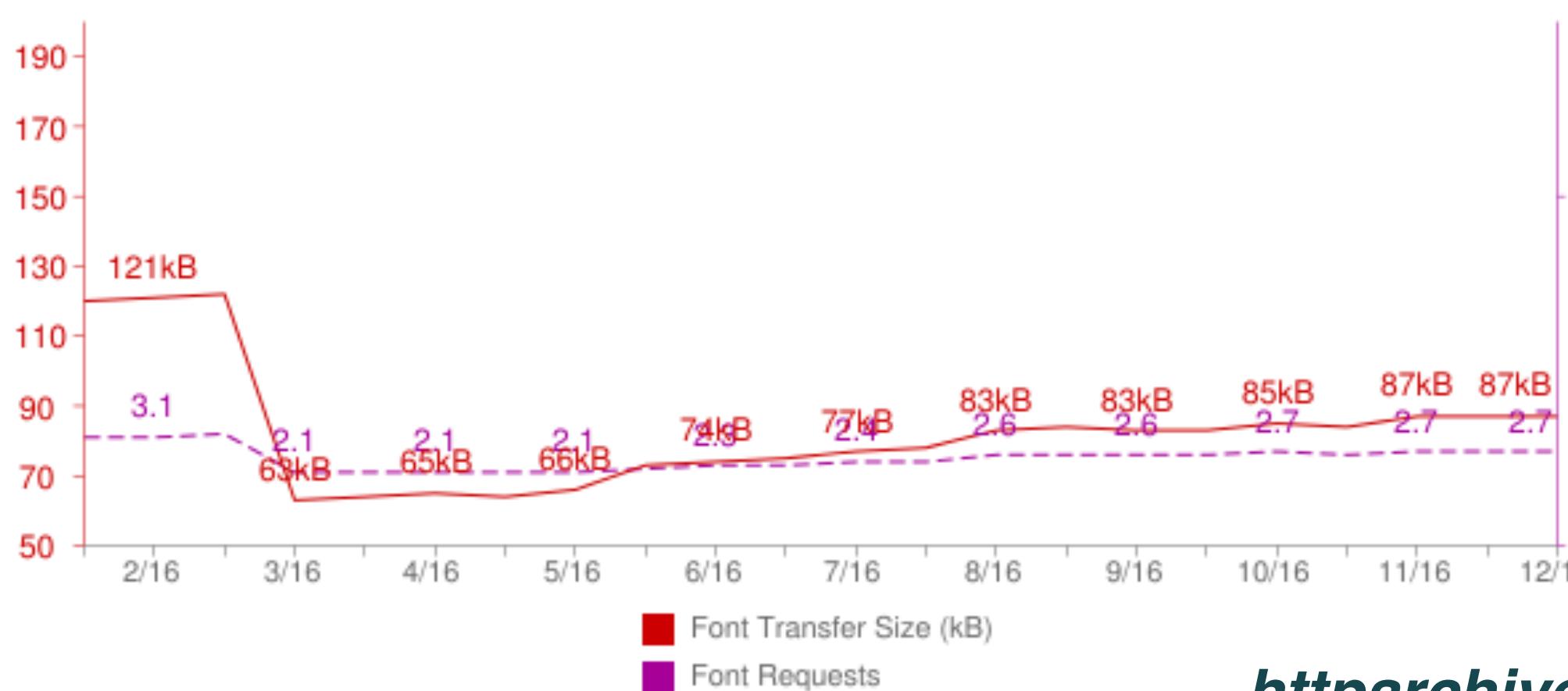
PROBLEM

Worldwide

Sites with Custom Fonts



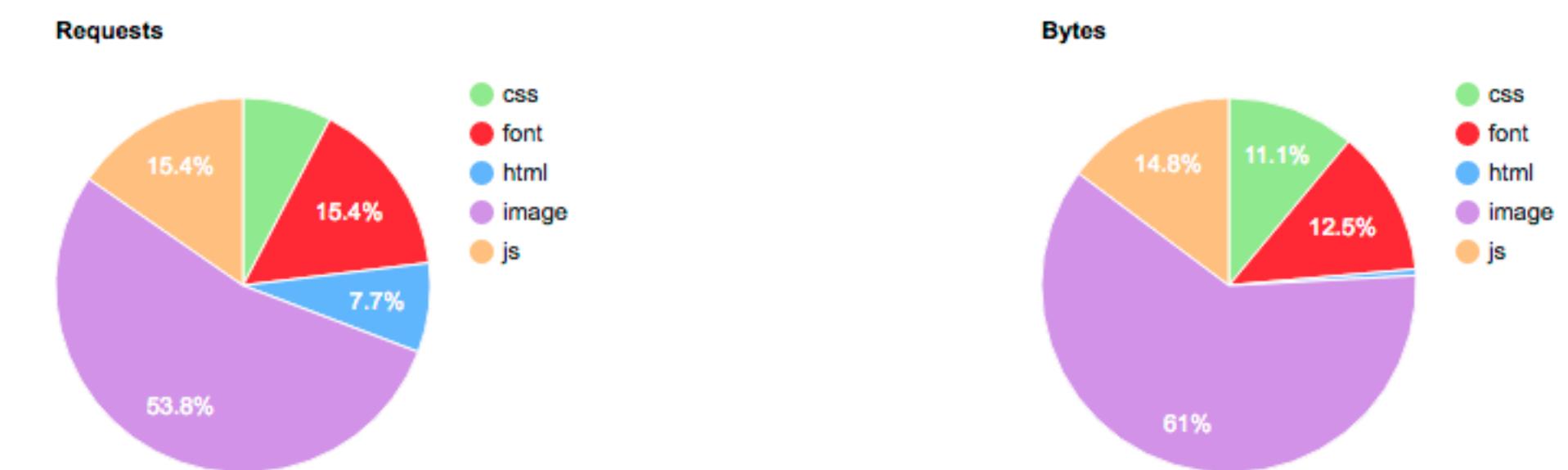
Font Transfer Size & Font Requests



[httparchive](http://archive)

Our test case

Content breakdown by MIME type (First View)



MIME Type	Requests
image	7
font	2
js	2
css	1
html	1
flash	0
other	0

MIME Type	Bytes
image	746,464
js	181,072
font	153,434
css	135,293
html	6,661
flash	0
other	0

We saved ~65% in custom web
font file size using
font subsetting

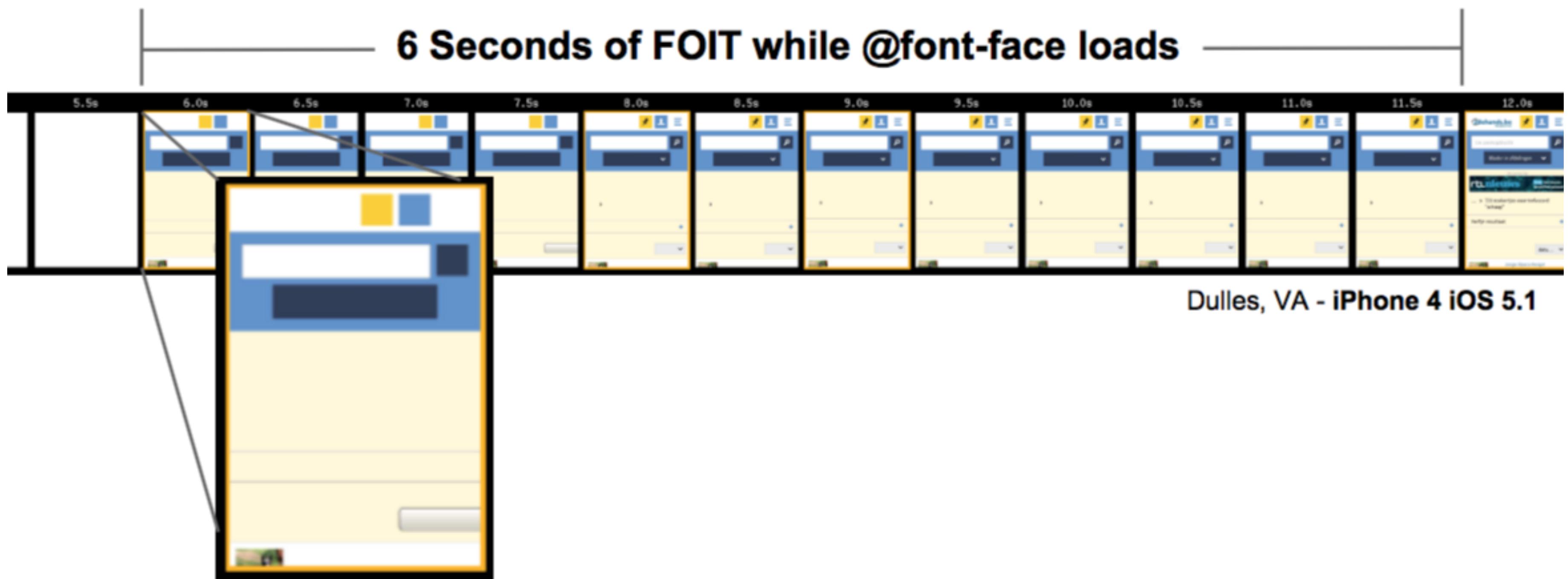
[font squirrel font subsetting](#)

BLOCKING FONT LOADING

```
@font-face {  
    font-family: 'Noto';  
    src: url('noto.woff2') format('woff2'),  
        url('noto.woff') format('woff');  
}  
  
html {  
    font-family: Noto, Georgia, serif;  
}
```

FOIT





From FilamentGroup 2dehands review

START WITH SYSTEM FONT

```
html {  
    font-family: Georgia, serif;  
}
```

```
html.fonts-loaded {  
    font-family: Noto, Georgia, serif;  
}
```

ENHANCE AFTER ASYNC LOADING

```
// (include FontFaceObserver here)
var font = new FontFaceObserver('Noto');
var html = document.documentElement;

// load font async, then enhance HTML:
font.load().then(function () {
  html.className += ' fonts-loaded';
});
```

FOUT



WORK BLOG TEAM CONTACT NLIEN

.NET can has wow front-end too

Building a modular front-end in .NET Core



by Joao
September 16, 2016

Table of contents

- [Why we need a .NET front-end stack](#)
- [Running .NET on Mac OS](#)
- [Picking best practices](#)
- [A back-end agnostic module viewer](#)
- [Embracing .NET and its standards](#)
- [File structure](#)
- [Conclusion](#)

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Recently we successfully integrated our front-end approach into a .NET setup. We created a demo viewer, defined a suitable project structure, and shared our code for it on Github:

[.NET Core front-end development guide →](#)

In this blog post, we explain why and how we set it up.

Why we need a .NET front-end stack

Node.js on the back-end is still a fairly small affair, moreso in corporate environments where .NET and Java still reign supreme. However, as front-enders we prefer to work with Node.js — or, to be honest, we *need* to, as many of the tools we use are written with Node.

We often try to **combine the front-end and back-end into a single project environment**. If for some reason we can't, we deliver a static, modular front-end using Nunjucks templates and stub data. Back-end developers then build the actual application out of prerendered templates and precompiled assets.

This conversion however is time-consuming and prone to errors. So, to smoothen this process, we built a **front-end development stack for .NET**.

Running .NET on Mac OS

ASP.NET is available for Windows only, whereas all of De Voorhoeve (and many



WORK BLOG TEAM CONTACT NLIEN

.NET can has wow front-end too

Building a modular front-end in .NET Core



by Joao
September 16, 2016

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- [Why we need a .NET front-end stack](#)
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- [Embracing .NET and its standards](#)
- [File structure](#)
- [Conclusion](#)

...

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CONDITIONAL FONT LOADER

```
font.load().then(function () {  
  html.className += ' fonts-loaded';  
  setCookie('fonts-loaded');  
});
```

On server, if 'fonts-loaded' cookie:

```
<html class="fonts-loaded">
```



Name	Value	Domain	Path	Expires / Max-Age
fonts-loaded	true	www.voorhoede.nl	/	2016-10-21T13:01:32.000Z
full-css-loaded	/assets/css/main-0d82fe89fd.css	www.voorhoede.nl	/	2016-10-21T13:01:32.000Z

FUTURE

```
@font-face {  
    font-family: ExampleFont;  
    src: url(/examplefont.woff2) format('woff2');  
    font-weight: 400;  
    font-style: normal;  
    font-display: swap;  
}
```

CSS



BLOCKING STYLE LOADING

```
<head>
  <!-- Loading early means blocking page: -->
  <link rel="stylesheet" href="index-f3c2b4.css">
</head>

<body>
  <!-- Loading late means flash of unstyled content: -->
  <link rel="stylesheet" href="index-f3c2b4.css">
</body>
```

LOAD STYLES ASYNC

```
<script>
    // (include loadCSS here)
    var stylesheet = loadCSS('index-f3c2b4.css');
</script>

<noscript>
    <link rel="stylesheet" href="index-f3c2b4.css">
</noscript>
```

Front-end Developers | De Voorhoede

Secure | https://www.voorhoeede.nl

De Voorhoede

[front-end developers](#)

Site menu

- [Werk](#)
- [Blog](#)
- [Team](#)
- [Contact](#)

- [nl](#)
- [en](#)

Wij zijn De Voorhoede

Critical CSS is the minimum set of
above the fold blocking CSS that we
need to make the page recognisable
to the user

GENERATE CRITICAL CSS



Critical

CRITICAL CSS

```
<html>
<head>
  <style> /* inlined critical CSS */ </style>
  <script> loadCSS('non-critical.css'); </script>
  <noscript>
    <link rel="stylesheet" href="non-critical.css">
  </noscript>
</head>
<body>
  ...
</body>
</html>
```

APPLY CRITICAL CSS

The image shows two side-by-side screenshots of the De Voorhoede website. Both screenshots have a yellow header bar at the top containing the logo, navigation links (WERK, BLOG, TEAM, CONTACT, NL | EN), and a smartphone icon.

Left Screenshot: The main content area has a white background. It features a large text block: "Wij zijn DE VOORHOEDE" followed by "We bouwen front-end oplossingen waarmee je jaren vooruit kunt". Below this is a dark circular button with a white downward arrow. Underneath is a table with three rows:

100% web	We bouwen websites, mobiele apps en user interfaces voor ieder apparaat en platform.
Robuust	We bouwen schaalbare en onderhoudbare front-end oplossingen, die je naadloos kunt integreren met je back-end systemen.
Gespecialiseerd	Voorhoede developers zijn experts in webtechnologie - JavaScript, HTML, CSS. Met onze uniforme werkwijze zorgen we voor continuïteit.

At the bottom, there is a red horizontal bar with the text: "We geloven in universele oplossingen die door iedereen te gebruiken zijn. Dit bereiken we door webtoepassingen te maken die altijd en overal werken op elk apparaat." Below this is a section titled "Dit kunnen we voor je doen" with icons for responsive websites and complex webapplications.

Right Screenshot: The main content area has a white background. It features the same text block and button as the left screenshot. Below is a table with three rows:

100% web	We bouwen websites, mobiele apps en user interfaces voor ieder apparaat en platform.
Robuust	We bouwen schaalbare en onderhoudbare front-end oplossingen, die je naadloos kunt integreren met je back-end systemen.
Gespecialiseerd	Voorhoede developers zijn experts in webtechnologie - JavaScript, HTML, CSS. Met onze uniforme werkwijze zorgen we voor continuïteit.

At the bottom, there is a teal-colored section with the quote: "We geloven in universele oplossingen die door iedereen te gebruiken zijn. Dit bereiken we door webtoepassingen te maken die altijd en overal werken op elk apparaat." Below this is a section titled "Dit kunnen we voor je doen" with icons for responsive websites and complex webapplications.

Critical CSS on voorhoede.nl

CONDITIONAL STYLE LOADER

```
<html><head><style>/ *critical CSS* /</style><script>
// (include loadCSS & onloadCSS here)
var stylesheet = loadCSS('index-f3c2b4.css');
onloadCSS(stylesheet, function() {
  setCookie('full-css-loaded', 'f3c2b4');
});
```

On server, if 'full-css-loaded' cookie and version is equal:

```
<link rel="stylesheet" href="index-f3c2b4.css">
```

Resources				
Name	Value	Domain	Path	Expires / Max-Age
fonts-loaded	true	www.voorhoede.nl	/	2016-10-21T13:01:32.000Z
full-css-loaded	/assets/css/main-0d82fe89fd.css	www.voorhoede.nl	/	2016-10-21T13:01:32.000Z

[cookies on voorhoede.nl](#)

JAVASCRIPT



There is no critical JS

BLOCKING SCRIPT LOADING

```
<head>
  <!-- Loading early means blocking page: -->
  <script src="index-6a14b2.js"></script>
</head>

<body>
  <!-- Loading late means wasting time: -->
  <script src="index-6a14b2.js"></script>
</body>
```

OPTIMISE SCRIPT LOADING

```
<head>
  <!-- Load early, execute after DOM ready -->
  <script src="index-6a14b2.js" defer></script>
</head>
```

CONDITIONAL SCRIPT LOADING

```
<script>
  if (!querySelector in document) {
    return;
};

loadJS('index-6a14b2.js', function() {
  var html = document.documentElement;
  html.className += ' enhanced';
});
</script>
```

FILE LEVEL CACHING



REVISIONING

```
gulp.task('revision:hash', function() {
  return gulp.src([
    paths.dist + '**/css/main.css',
    paths.dist + '**/js/index.js'
  ])
    .pipe(rev())
    .pipe(gulp.dest(paths.dist))
    .pipe(rev.manifest(manifestPath))
    .pipe(gulp.dest(''));
});
```

REVISIONING

```
{  
  "assets/css/main.css": "assets/css/main-e946c959b4.css",  
  "assets/js/index.js": "assets/js/index-30d938a361.js"  
}
```

REV REPLACE

```
gulp.task('revision:replace', function() {
  return gulp.src([
    paths.dist + '**/*.html'
  ])
  .pipe(revReplace({
    manifest: gulp.src(manifestPath)
  }))
  .pipe(gulp.dest(paths.dist));
});
```

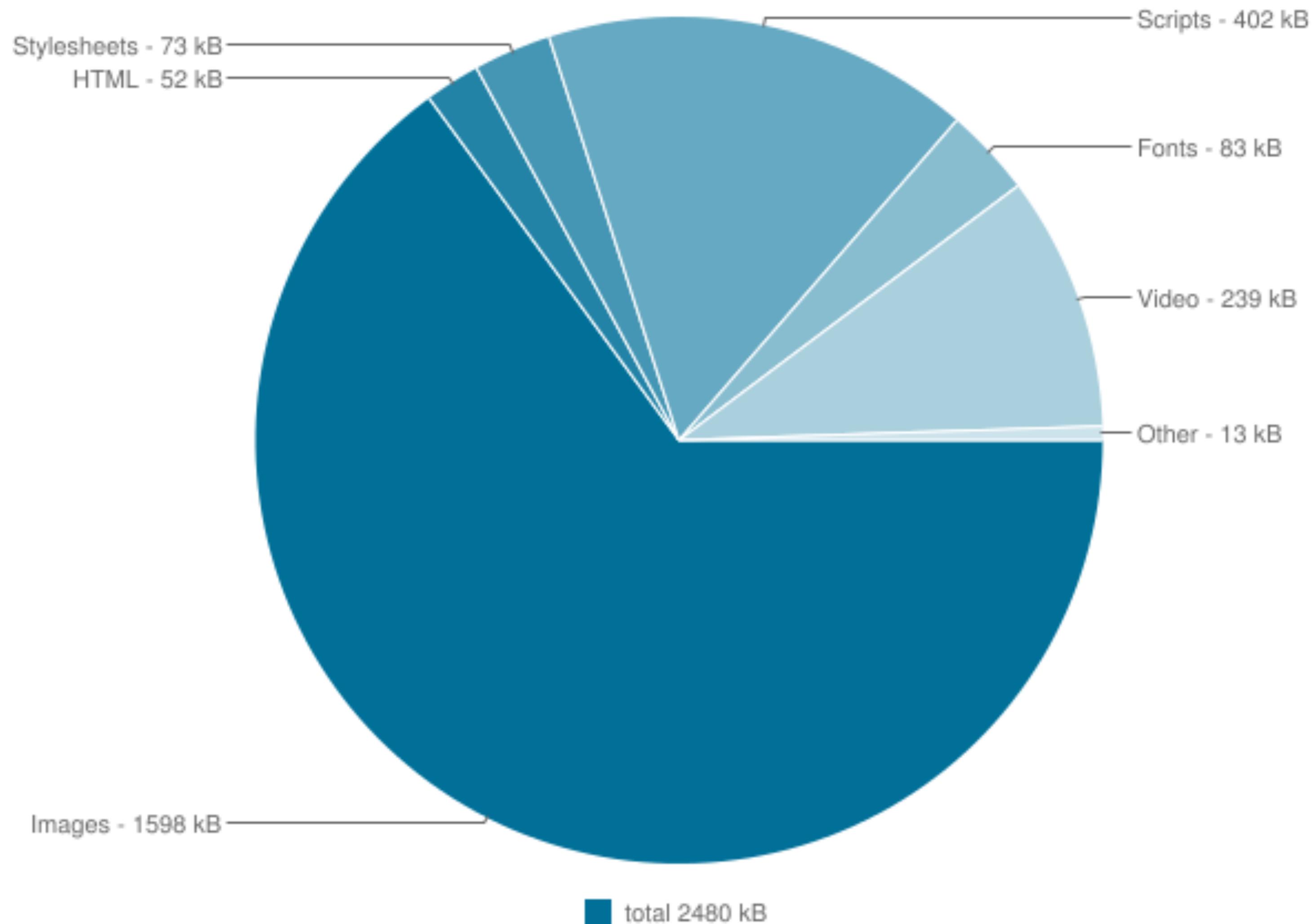
CACHING

cache (Cache-Control: max-age=31536000)

IMAGES



Average Bytes per Page by Content Type



CLIENT HINTS

```
<head>
...
<meta http-equiv="Accept-CH"
      content="DPR, Viewport-Width, Width">
</head>

```

Request headers will hold:

- width: 360
- dpr: 2
- viewport-width: 720

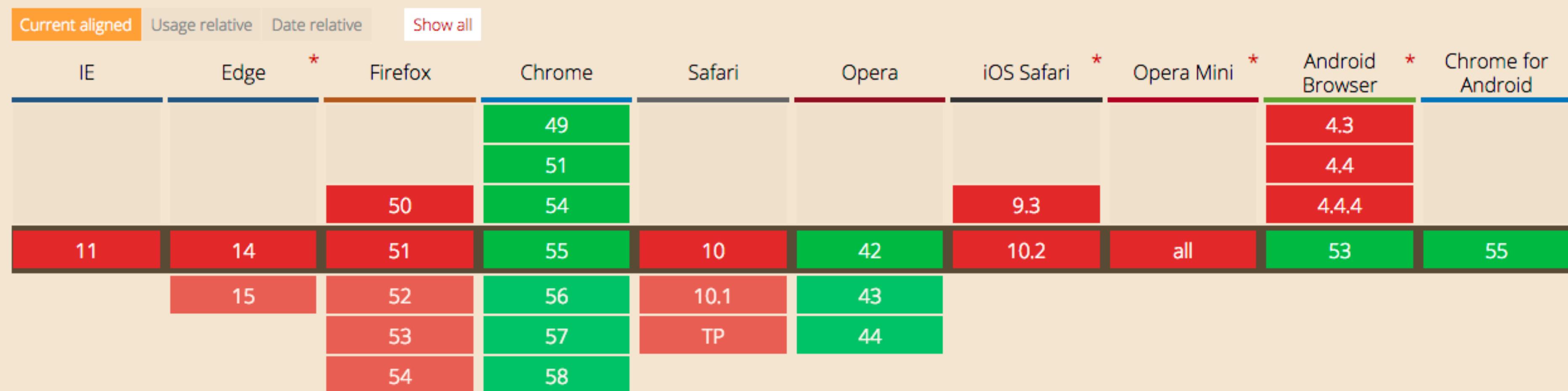
CLIENT HINTS

Client Hints: DPR, Width, Viewport-Width

Global

51.38%

DPR, Width, and Viewport-Width hints enable proactive content negotiation between client and server, enabling automated delivery of optimized assets - e.g. auto-negotiating image DPR resolution.



IMG

variable	Known by author when she's writing the code?	Known by browser when it's loading the page?
viewport dimensions	no	yes
image size relative to the viewport	yes	no
screen density	no	yes
source files' dimensions	yes	no

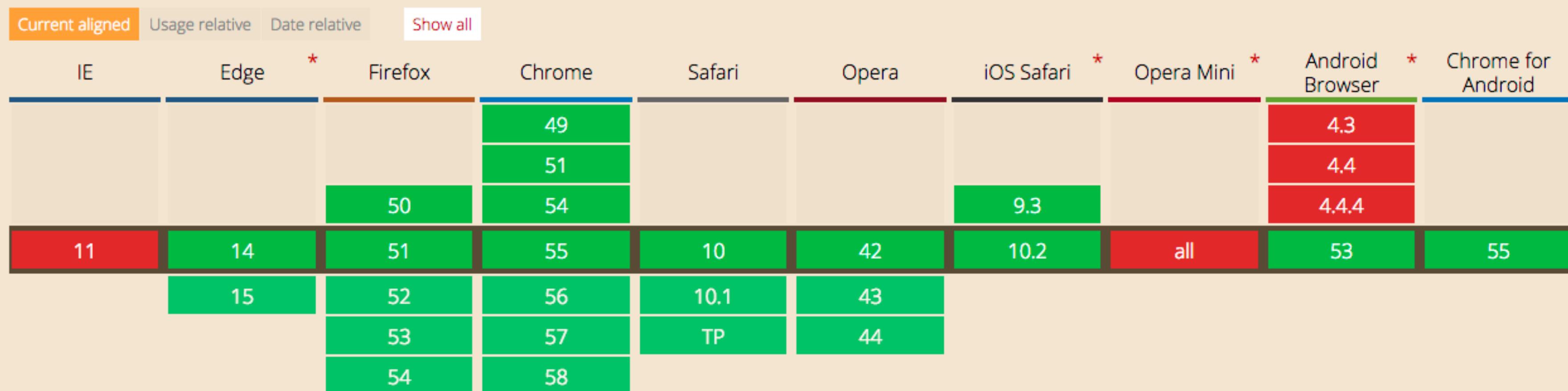
SRCSET

Srcset attribute  - LS

Global

83.8% + 0.68% = 84.48%

Allows authors to define various image resources and "hints" that assist a user agent to determine the most appropriate image source to display (e.g. high-resolution displays, small monitors, etc).



Srcset tells the browser **what versions** of an image are available

SRCSET

1. You can choose from
any of these images....

```

```

2. who are each
this wide

3. Please pick the best option
for right now

SRCSET

Good

- The browser does all the work figuring out which image is most suited

“Bad”:

- You do not have control over when to load which image.
- The browser will not know how you display an image.

```

```

SRCSET

variable	Known by author when she's writing the code?	Known by browser when it's loading the page?
viewport dimensions	no	yes
image size relative to the viewport	yes	no
screen density	no	yes
source files' dimensions	yes	no yes! via srcset

Sizes tells the browser how an
image is rendered

SIZES

1. At this screen size....

```

```

2. I will be displayed
at roughly this size.

3. You can choose from any
of these images....

4. who are each this wide

5. Please pick the best option
for right now

SIZES

Good

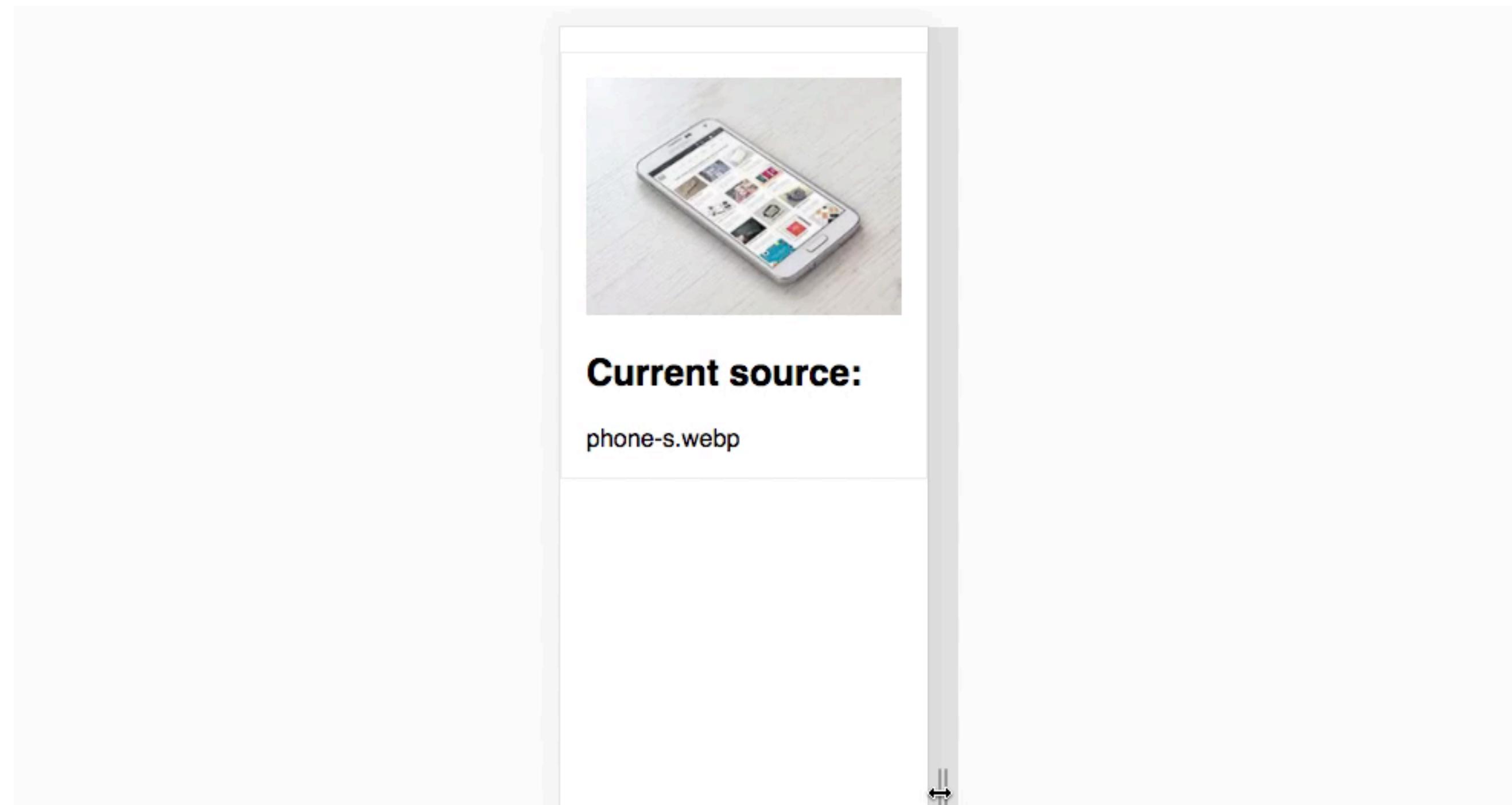
- The browser does all the work figuring out which image is most suited
- The browser has a clue on how an image is displayed

“Bad”:

- You do not have control over when to load which image.

```
when she's writing the<br>code? | Known by browser<br>when it's loading the<br>page? |
|----------------------------------------|----------------------------------------------------|----------------------------------------------------|
| viewport dimensions                    | no                                                 | yes                                                |
| image size relative to<br>the viewport | yes                                                | no yes! via <b>sizes</b>                           |
| screen density                         | no                                                 | yes                                                |
| source files'<br>dimensions            | yes                                                | no yes! via <b>srcset</b>                          |

# ART DIRECTION



# PICTURE

1. At this screen size....

2. .... use this image

```
<picture>
 <source media="(min-width: 1024px)"
 srcset="large.jpg">
 <source media="(min-width: 600px)"
 srcset="medium.jpg">
 <source srcset="small.jpg">

</picture>
```

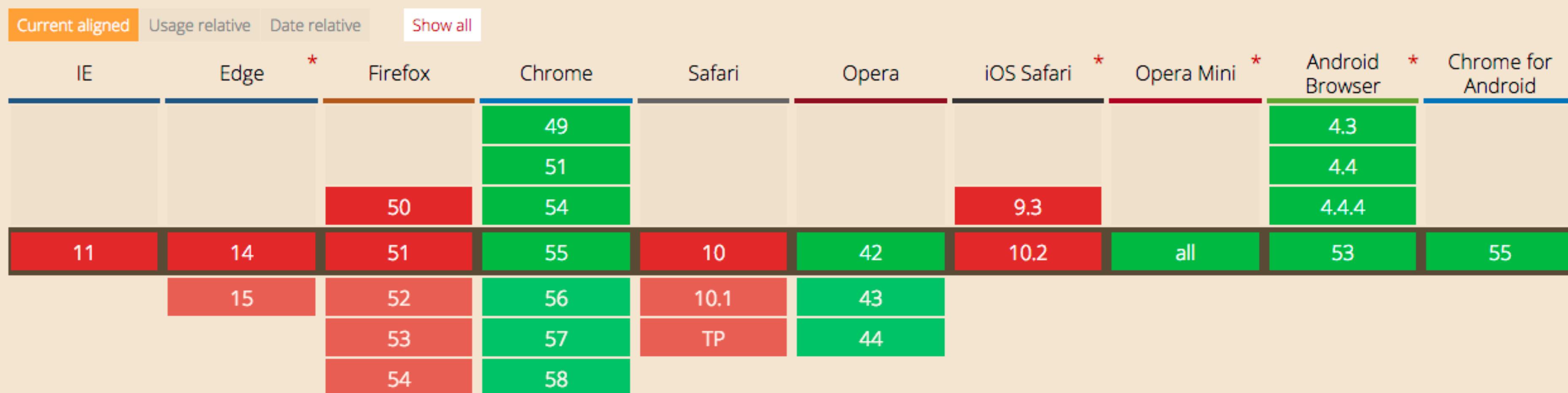
# WEBP

WebP image format  - UNOFF

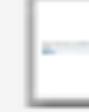
Global

72.51% + 0.39% = 72.9%

Image format that supports lossy and lossless compression, as well as animation and alpha transparency.



# WEBP

 voorhoede-network-analysis-l.webp	65.8KB
 voorhoede-fold-l.webp	51.8KB
 webpagetest-voorhoede-l.webp	34.7KB
 pagespeed-insights-voorhoede-l.webp	19.4KB
 voorhoede-cookies-l.webp	14.8KB
 average-bytes-per-page-chart-l.webp	10.6KB
 declan-l.webp	2.6KB

Total: 199.7KB

 voorhoede-network-analysis-l.jpg	109,35 KB
 voorhoede-fold-l.jpg	76,82 KB
 webpagetest-voorhoede-l.jpg	52,02 KB
 pagespeed-insights-voorhoede-l.jpg	31,49 KB
 voorhoede-cookies-l.jpg	21,46 KB
 average-bytes-per-page-chart-l.jpg	16,59 KB
 declan-l.jpg	3,53 KB

Total: 311.26KB

**-111.56KB**

**36% reduction**

# PICTURE

Tell the browser to use a **specific image** based on criteria

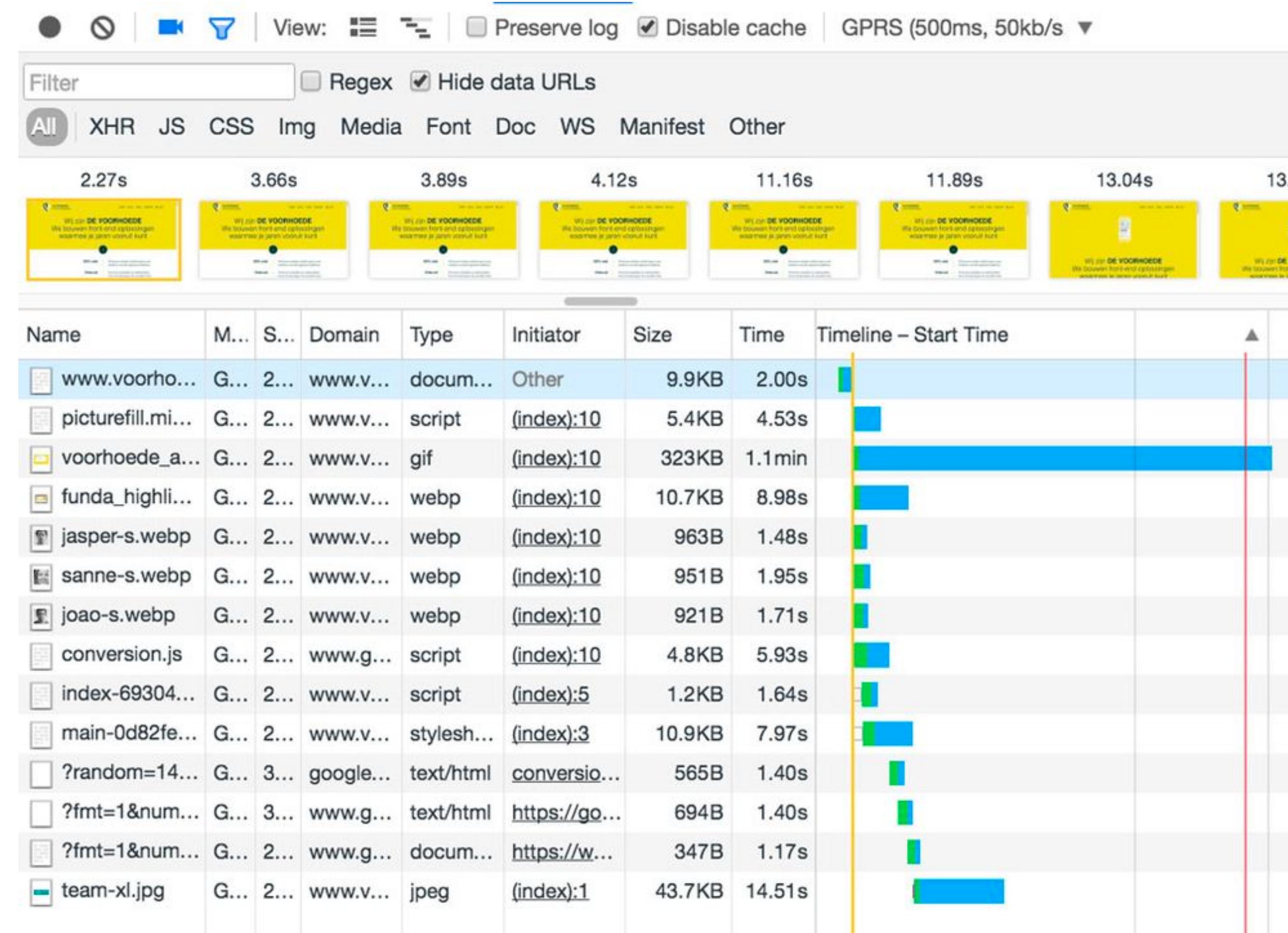
```
<picture>
 <source type="image/webp" srcset="l.webp" media="(min-width: 640px)">
 <source type="image/webp" srcset="m.webp" media="(min-width: 320px)">
 <source type="image/webp" srcset="s.webp">
 <source srcset="l.jpg" media="(min-width: 640px)">
 <source srcset="m.jpg" media="(min-width: 320px)">
 <source srcset="s.jpg">

</picture>
```

# RESULT



# RESULT



[result on voorhoede.nl](http://result.on voorhoede.nl)

# RESULT

PageSpeed Insights [G+](#)

https://www.voorhoede.nl/ [ANALYZE](#)

Mobile  Desktop

**100 / 100 Speed**

**Congratulations! No issues found.**

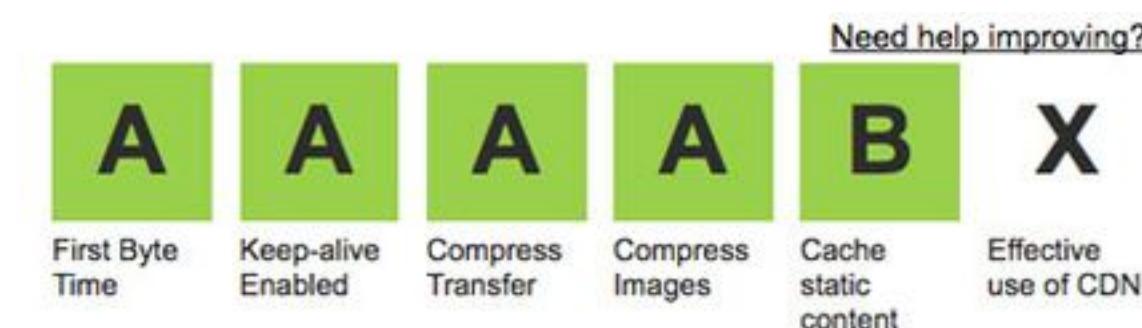
Avoid landing page redirects  
Your page has no redirects. Learn more about [avoiding landing page redirects](#).

Eliminate render-blocking JavaScript and CSS in above-the-fold content  
You have no render-blocking resources. Learn more about [removing render-blocking resources](#).



## Web Page Performance Test for <https://www.voorhoede.nl>

From: Amsterdam, NL - IISpeed - Chrome - Cable  
7/13/2016, 6:02:33 PM



[Summary](#) [Details](#) [Performance Review](#) [Content Breakdown](#) [Domains](#) [Screen Shot](#)

Tester: VPS16230-93.191.133.233 [Raw page data](#) - [Raw object data](#)  
[Re-run the test](#) [Export HTTP Archive \(.har\)](#) [View Test Log](#)

	Load Time	First Byte	Start Render	Speed Index	DOM Elements	Document Complete			Fully Loaded			
						Time	Requests	Bytes In	Time	Requests	Bytes In	Cost
First View	1.452s	0.279s	0.609s	693	197	1.452s	21	592 KB	1.503s	22	597 KB	\$---
Repeat View	1.028s	0.186s	0.609s	733	191	1.028s	4	38 KB	1.028s	4	38 KB	

[\*\*result on voorhoede.nl\*\*](#)

## Latest SRP

PAINT  
1.6 Sec.

USABLE PAGE  
2.2 Seconds



## Min + gzip

PAINT  
1.6 Sec.

USABLE PAGE  
2.0 Seconds



## CriticalCSS + min + gzip

PAINT  
0.6 Sec.

USABLE PAGE  
1.3 Seconds



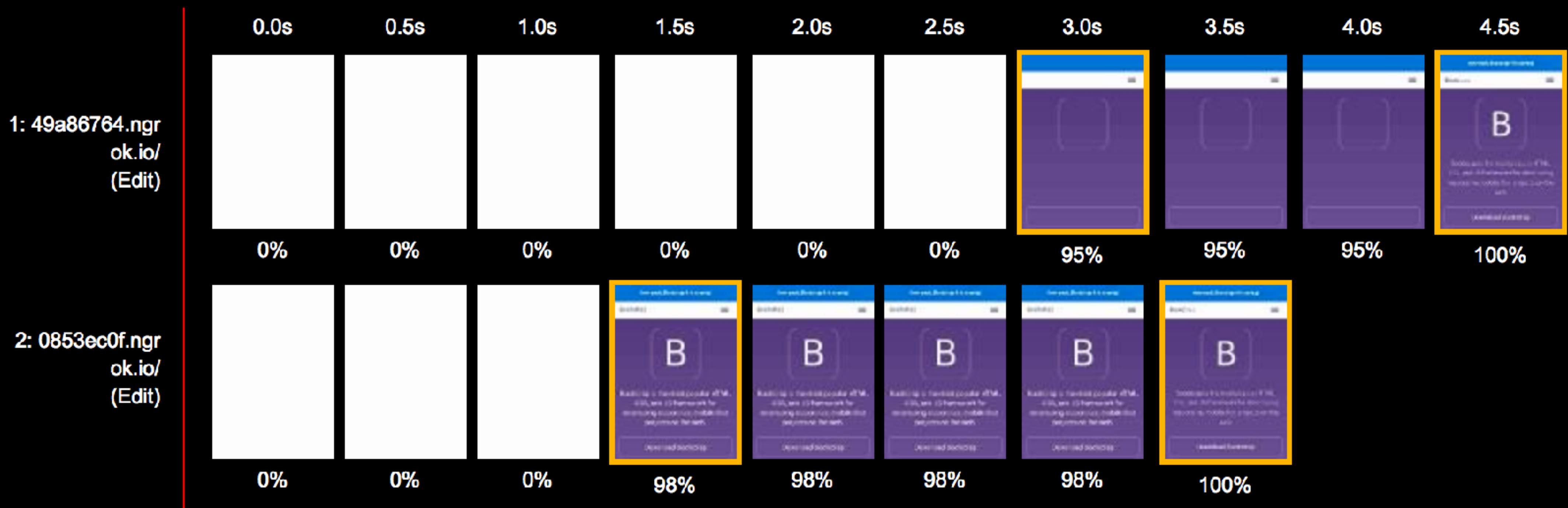
## Critical + FOIT + min + gzip

PAINT and USABLE PAGE  
0.7 Sec.



# GETBOOTSTRAP

Tested From: Dulles, VA - Moto G - Chrome - 3GFast



[Compare on WebPageTest](#)



# DE VOORHOEDE

front-end developers