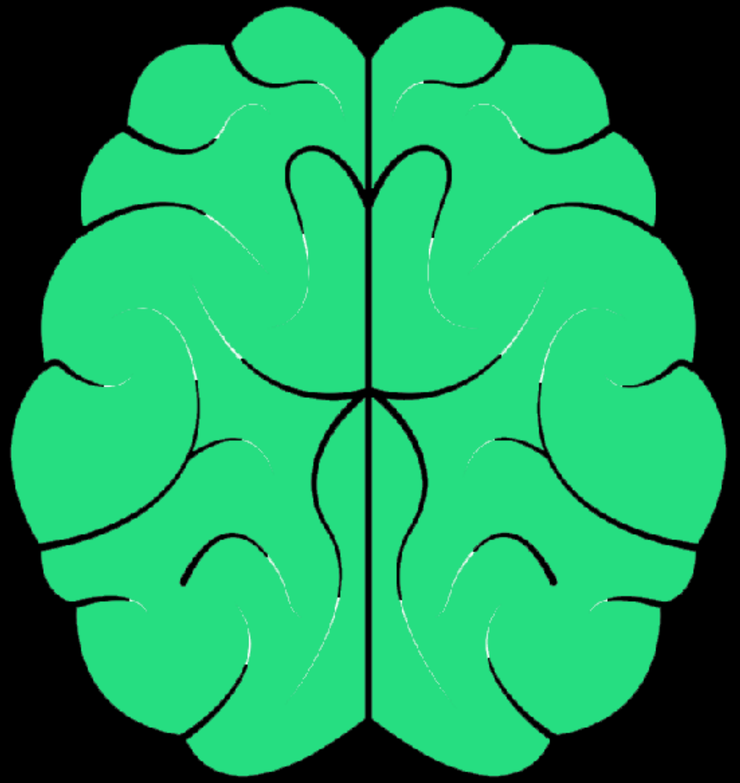
Hacking the Human Perception

Chris DeMars • @saltnburnem



https://pixabay.com/en/brain-icon-human-background-idea-1710293/

Chris DeMars

Front-End Developer

TUFT&NEEDLE

That’s me!

- ☆ Google Developer Expert
- ☆ Microsoft MVP
- ☆ Oracle Groundbreaker Ambassador
- ☆ Internatonal Speaker
- ☆ Founder of Vuetroit
- ☆ Host of Tales From the Script
- ☆ 💚 Tattoos & Horror

Why Are We Here Chris?

Let’s Talk!

Let’s Talk!

1.) Auditing & Testing

Let’s Talk!

1.) Auditing & Testing
2.) Time to First Paint

Let’s Talk!

1.) Auditing & Testing
2.) Time to First Paint
3.) Time to First Byte

Let’s Talk!

1.) Auditing & Testing
2.) Time to First Paint
3.) Time to First Byte
4.) Time to First Interactive

Let’s Talk!

1.) Auditing & Testing
2.) Time to First Paint
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4.) Time to First Interactive
5.) Perceived Performance

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  a.) Critical CSS

Let’s Talk!

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  a.) Critical CSS
  b.) Skeleton Screens

Let’s Talk!

1.) Auditing & Testing
2.) Time to First Paint
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4.) Time to First Interactive
5.) Perceived Performance
   a.) Critical CSS
   b.) Skeleton Screens
   c.) Fun Distractions

Performance?

Visibility of System Status

https://www.nngroup.com/articles/ten-usability-heuristics/

Visibility of System Status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

https://www.nngroup.com/articles/ten-usability-heuristics/

Fast?

Fast?

- Quick Desktop Load

Fast?

- Quick Desktop Load
- Quick Mobile Load

Fast?

- Quick Desktop Load
- Quick Mobile Load
- Time

Minimal Requests?

Minimal Requests?

- How many?

Minimal Requests?

- How many?
- What does that mean?

Load Time?

Load Time?

- Desktop

Load Time?

- Desktop
- 3G

Load Time?

- Desktop
- 3G
- 4G

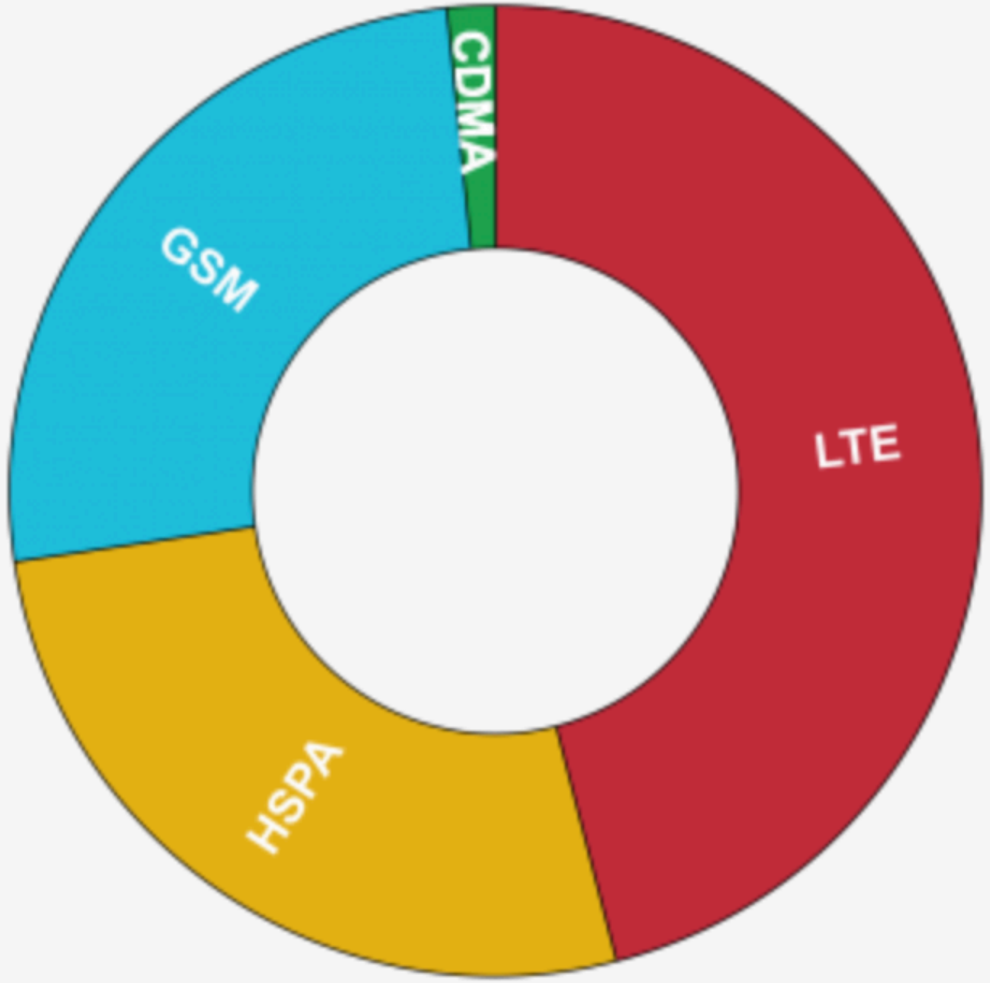
Load Time?

- Desktop
- 3G
- 4G
- 2G

Global Mobile Connections and Market Share by Technology

www.5gamericas.org

8.5 Billion Connections Worldwide



GSM 2.1 B Connections, 25% Market Share

HSPA 2.2 B Connections, 26% Market Share

LTE 4 B Connections, 44% Market Share

CDMA 131 M Connections, 1.5% Market Share

Source: Ovum December 2018

Performance

Performance

on the front end

Addy Osmani
@addyosmani

#PerfMatters

User Centric Metrics

User Centric Metrics

1.) Is it happening?

User Centric Metrics

1.) Is it happening?

2.) Is it useful?

User Centric Metrics

1.) Is it happening?

2.) Is it useful?

3.) Is it useable?

User Centric Metrics

1.) Is it happening?

2.) Is it useful?

3.) Is it useable?

4.) Is it delightful?

Testing
&
Audits

Lighthouse

netlify

Menu

Build, deploy, and manage modern web projects

Get an all-in-one workflow that combines global deployment, continuous integration, and HTTPS. And that's just the beginning.

Get started for free

Deploy your site in seconds*

1 Connect your repository

GitHub

Elements Console Sources Network Performance Audits

(no reports)

Audits help you identify and fix common problems that affect your site's performance, accessibility, and user experience. Learn more

Perform an audit...

netlify

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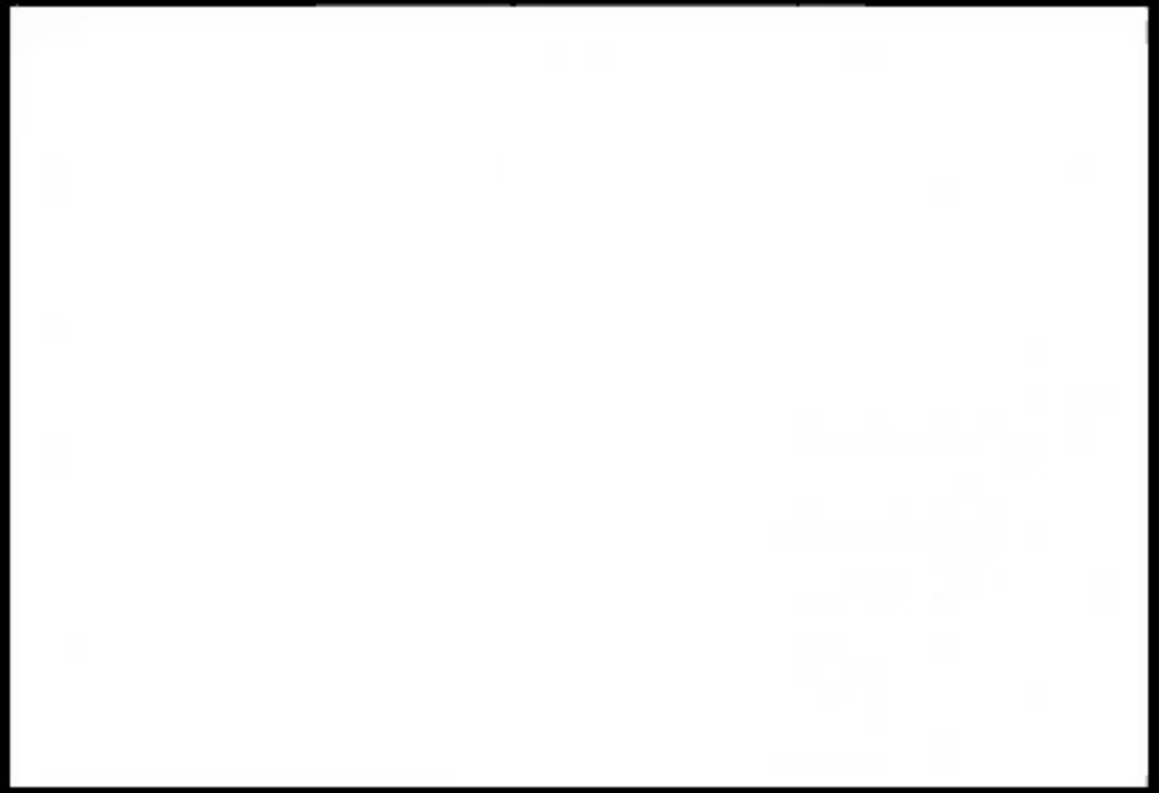
Perform an audit...

WebPageTest

Netlify - Desktop



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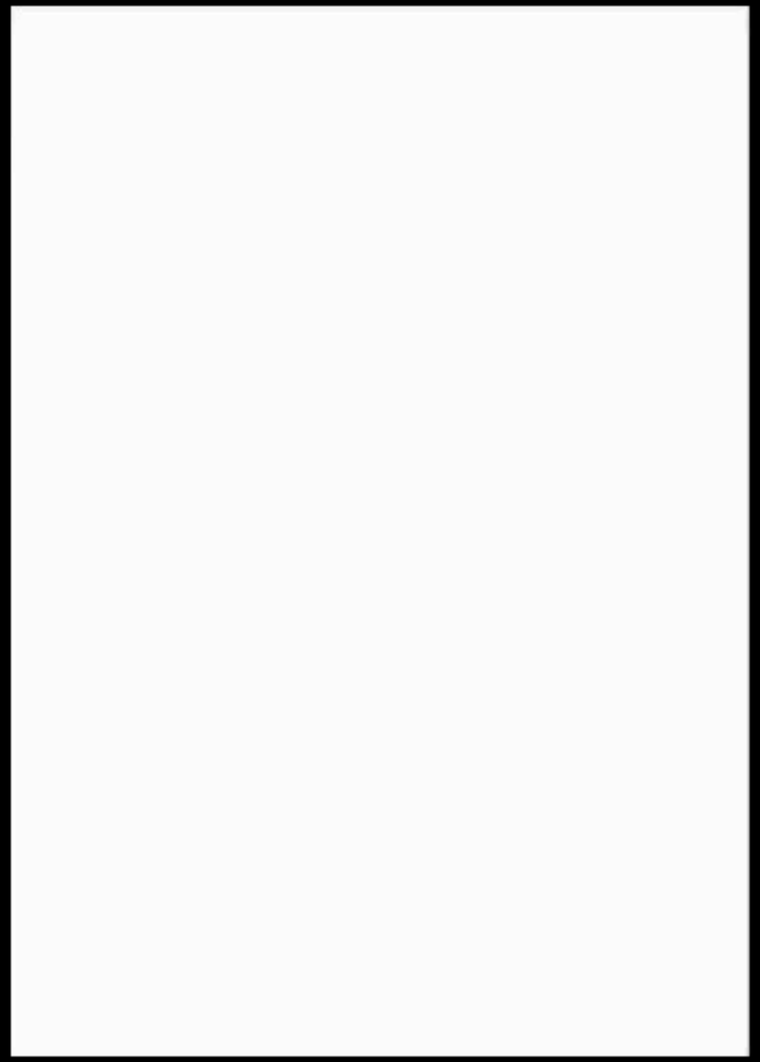
Netlify - 3G



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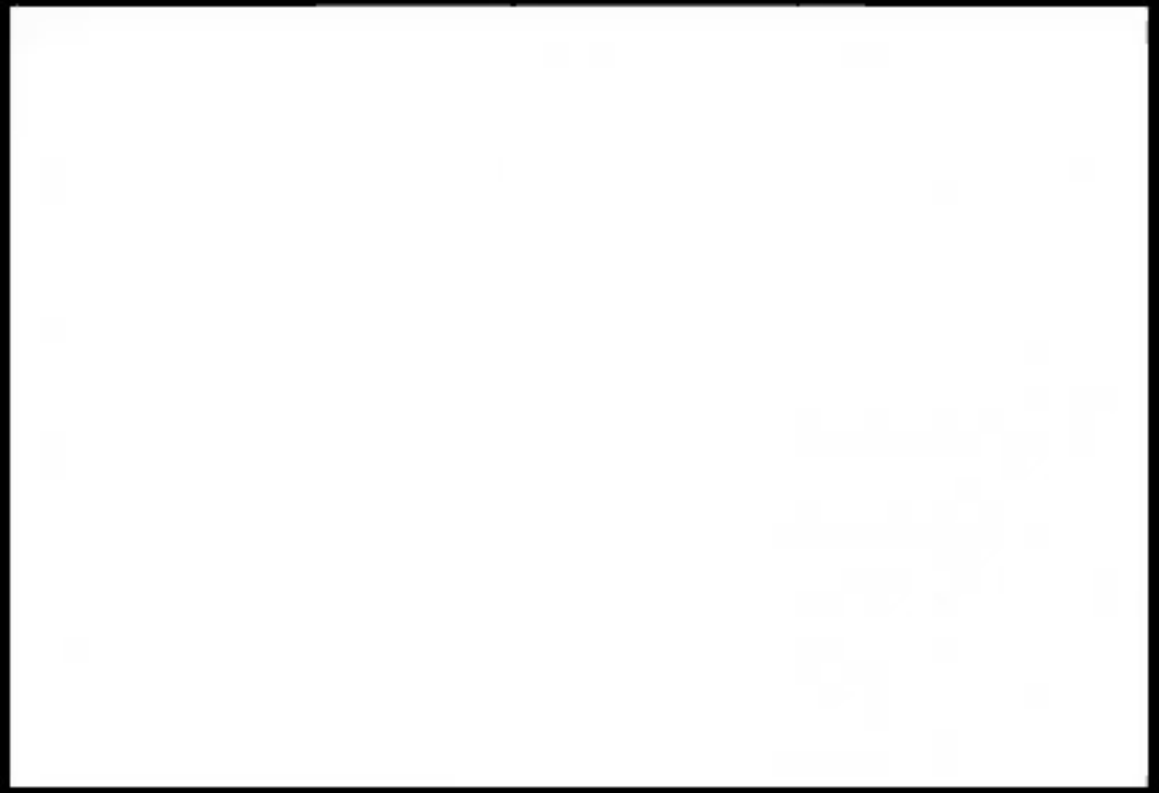
Netlify - Desktop



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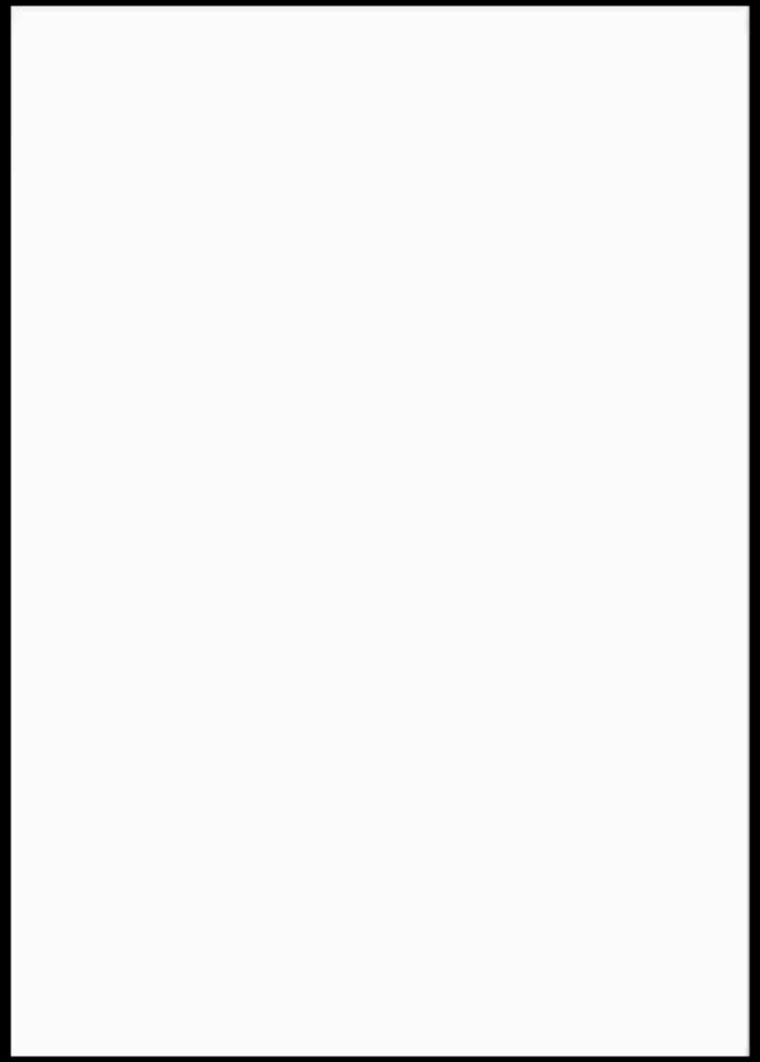

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WEBPAGETEST

HOME | TEST RESULT | TEST HISTORY | FORUMS | DOCUMENTATION | ABOUT

Need help improving?

Web Page Performance Test for

https://www.netlify.com/

From: Dulles, VA - **Chrome - Cable**
5/18/2018, 9:27:05 PM

First Byte Time	Keep-alive Enabled	Compress Transfer	Compress Images	Cache static content	Effective use of CDN
A	A	A	A	F	✓

Summary | Details | Performance Review | Content Breakdown | Domains | Processing Breakdown | Screen Shot | Image Analysis | Request Map

Tester: VM3-03-192.168.11.110
First View only
Test runs: **3**
Re-run the test

Raw page data - Raw object data
Export HTTP Archive (.har)
View Test Log

Performance Results (Median Run)

						Document Complete			Fully Loaded			
	Load Time	First Byte	Start Render	Speed Index	First Interactive (beta)	Time	Requests	Bytes In	Time	Requests	Bytes In	Cost
First View (Run 2)	1.649s	0.173s	1.200s	1216	> 1.640s	1.649s	18	206 KB	2.528s	31	243 KB	$---

Plot Full Results

Test Results

Run 1:

	Waterfall	Screen Shot	Video
First View (1.580s) Timeline (view) Processing Breakdown Trace (view)			Filmstrip View - Watch Video

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Plot Full Results

Test Results

Waterfall Charts

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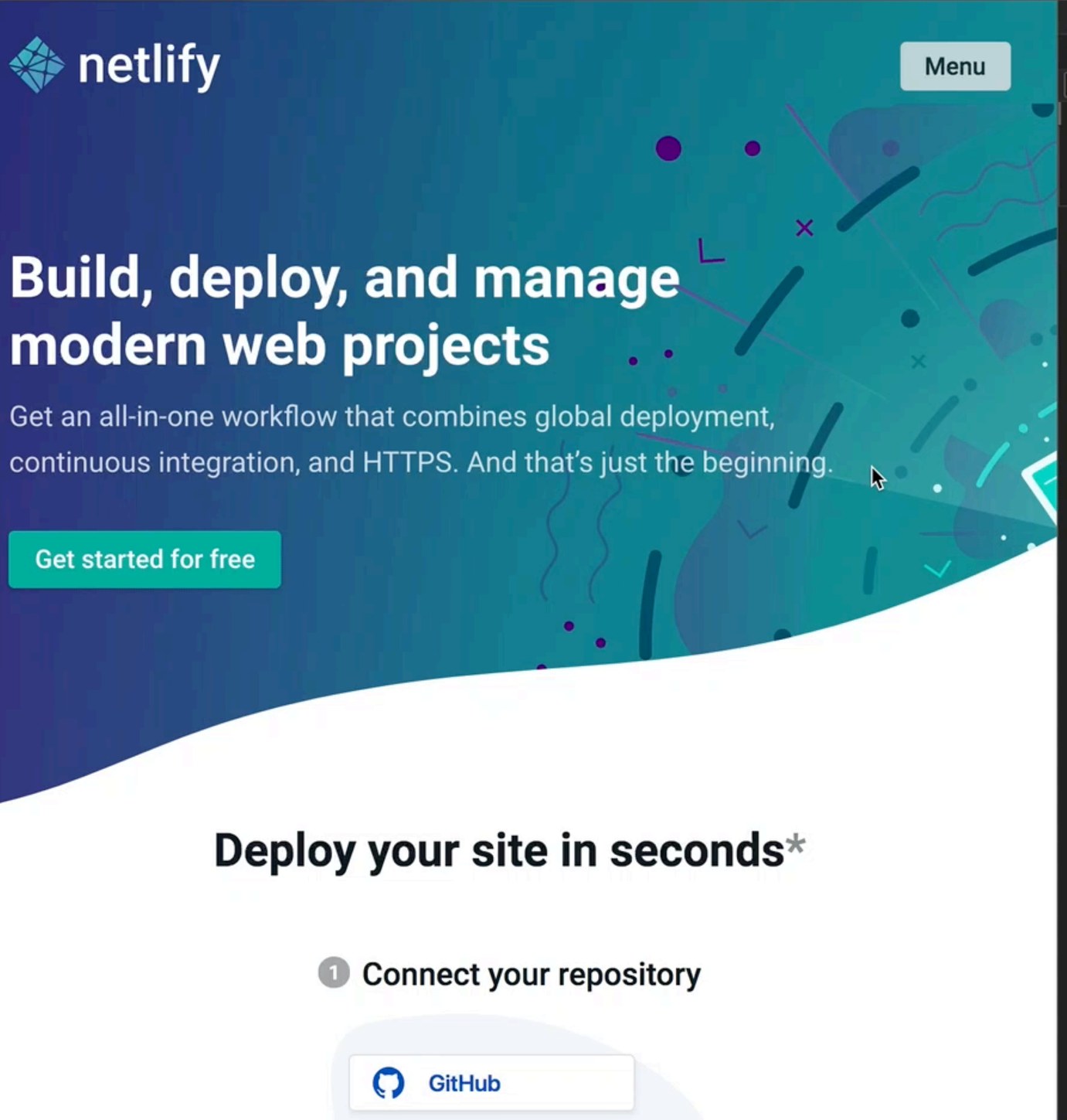
Chrome DevTools


netlify
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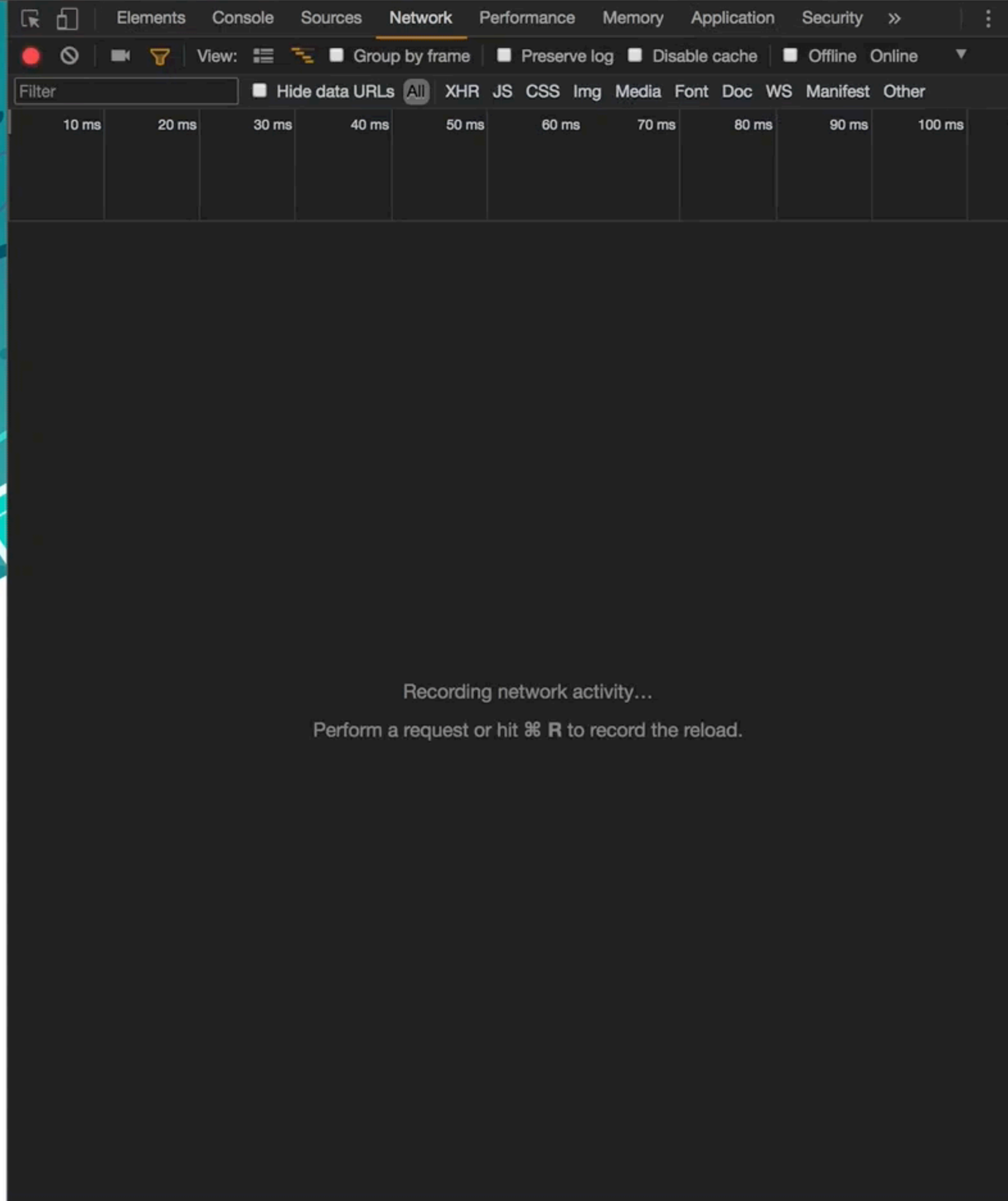
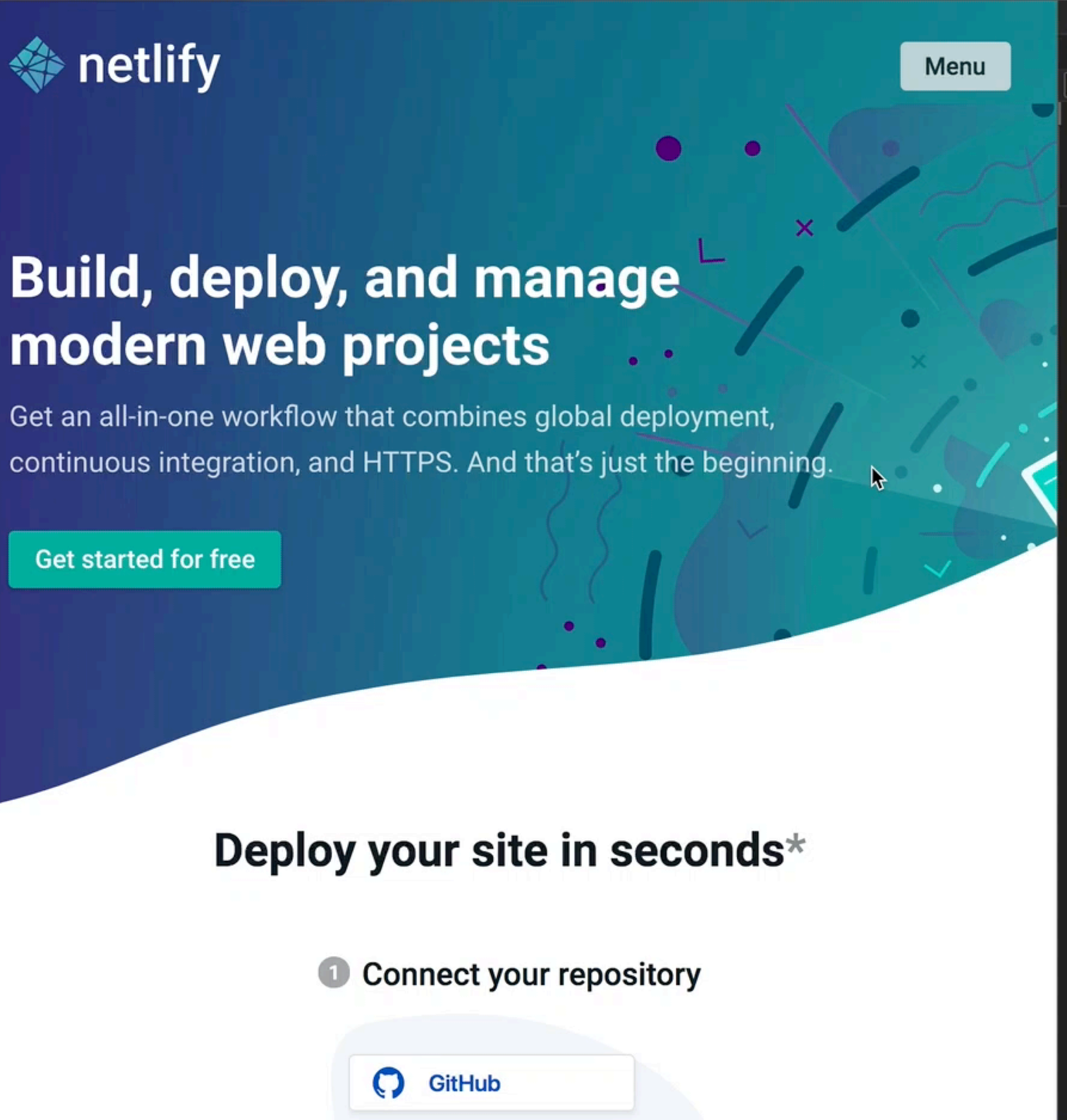

Elements
Console
Sources
Network
Performance
Memory
Application
Security
View:
Group by frame
Preserve log
Disable cache
Offline
Online
Filter
Hide data URLs
All
XHR
JS
CSS
Img
Media
Font
Doc
WS
Manifest
Other
10 ms
20 ms
30 ms
40 ms
50 ms
60 ms
70 ms
80 ms
90 ms
100 ms
Recording network activity...
Perform a request or hit ⌘ R to record the reload.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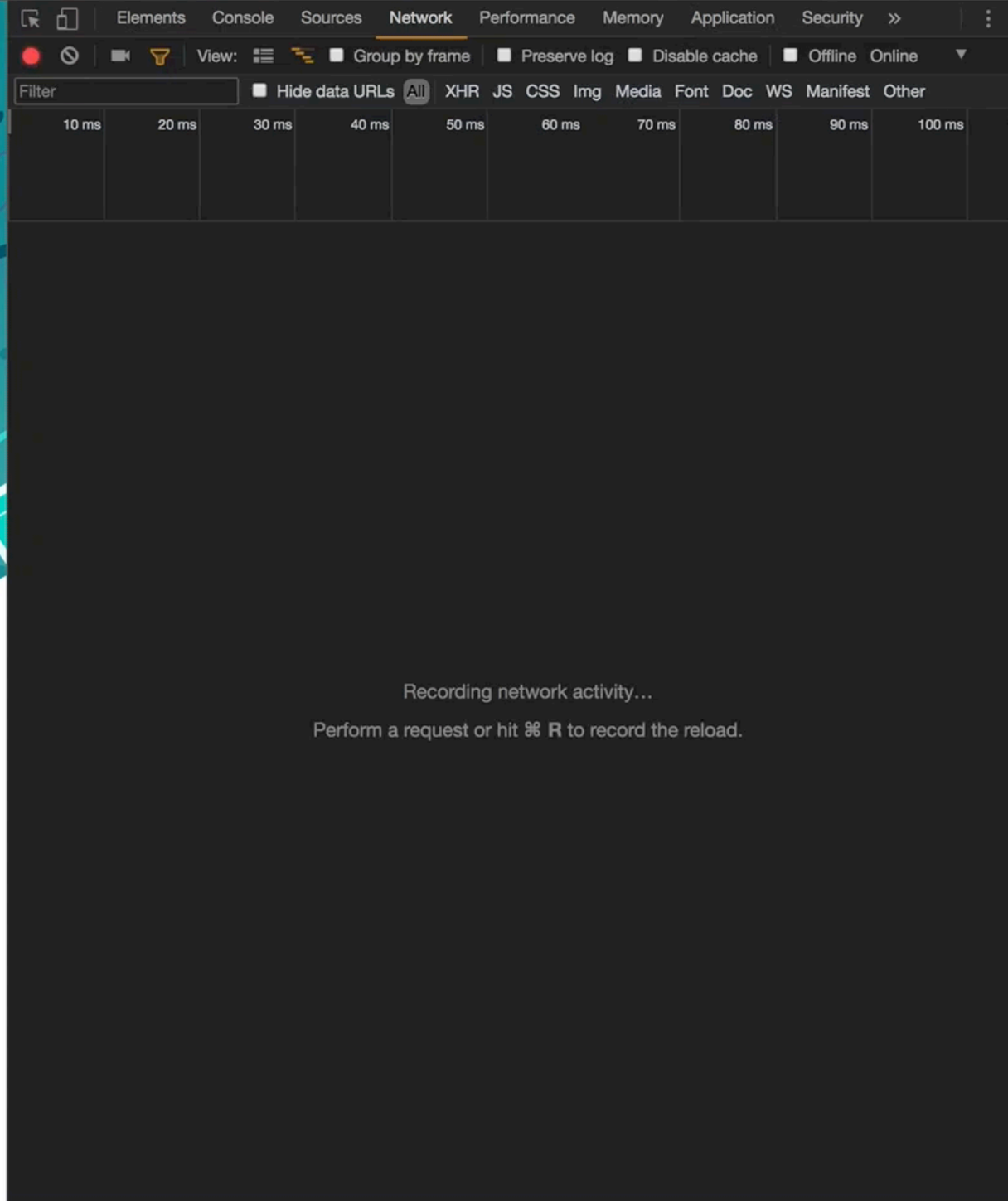
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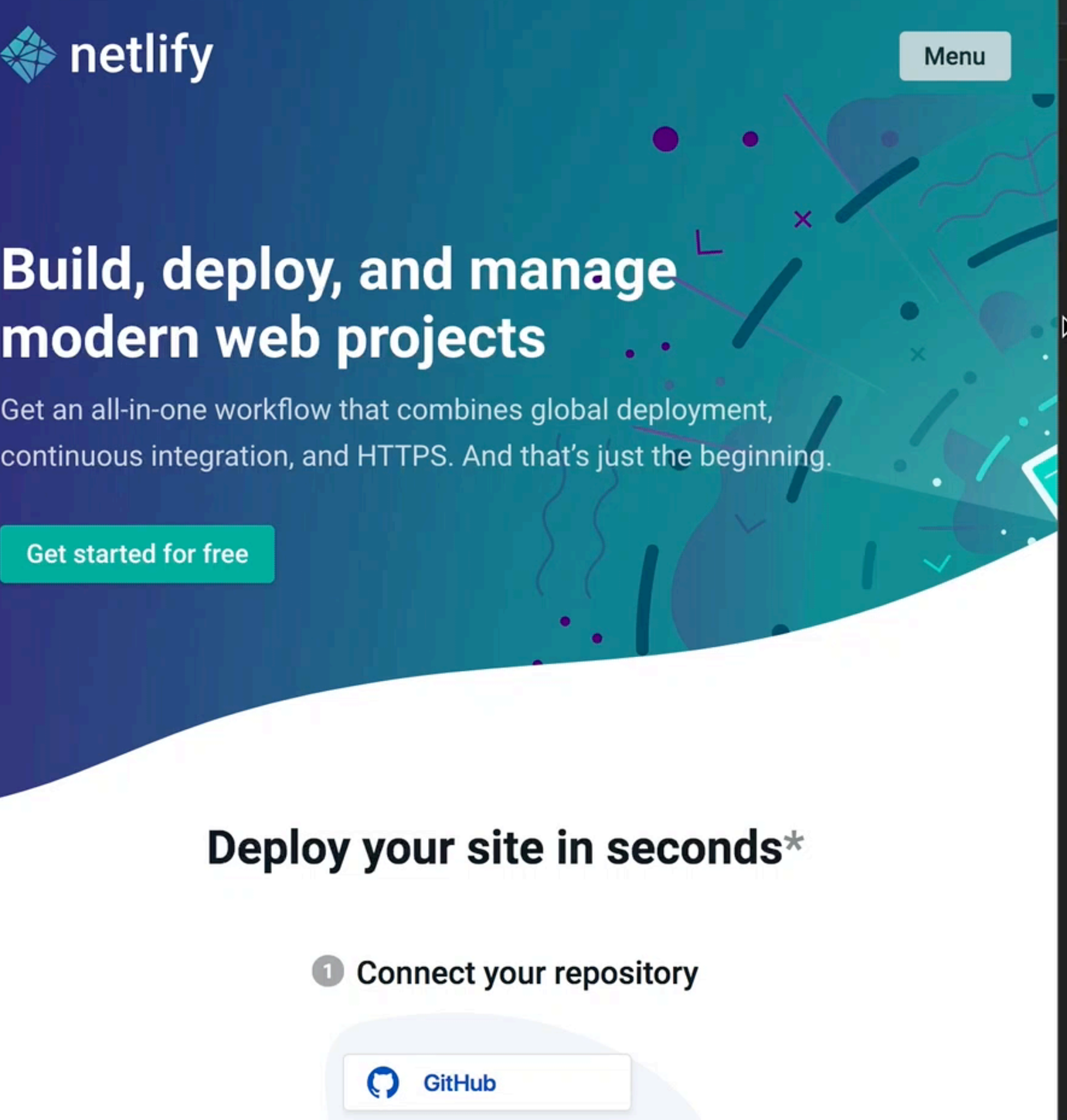
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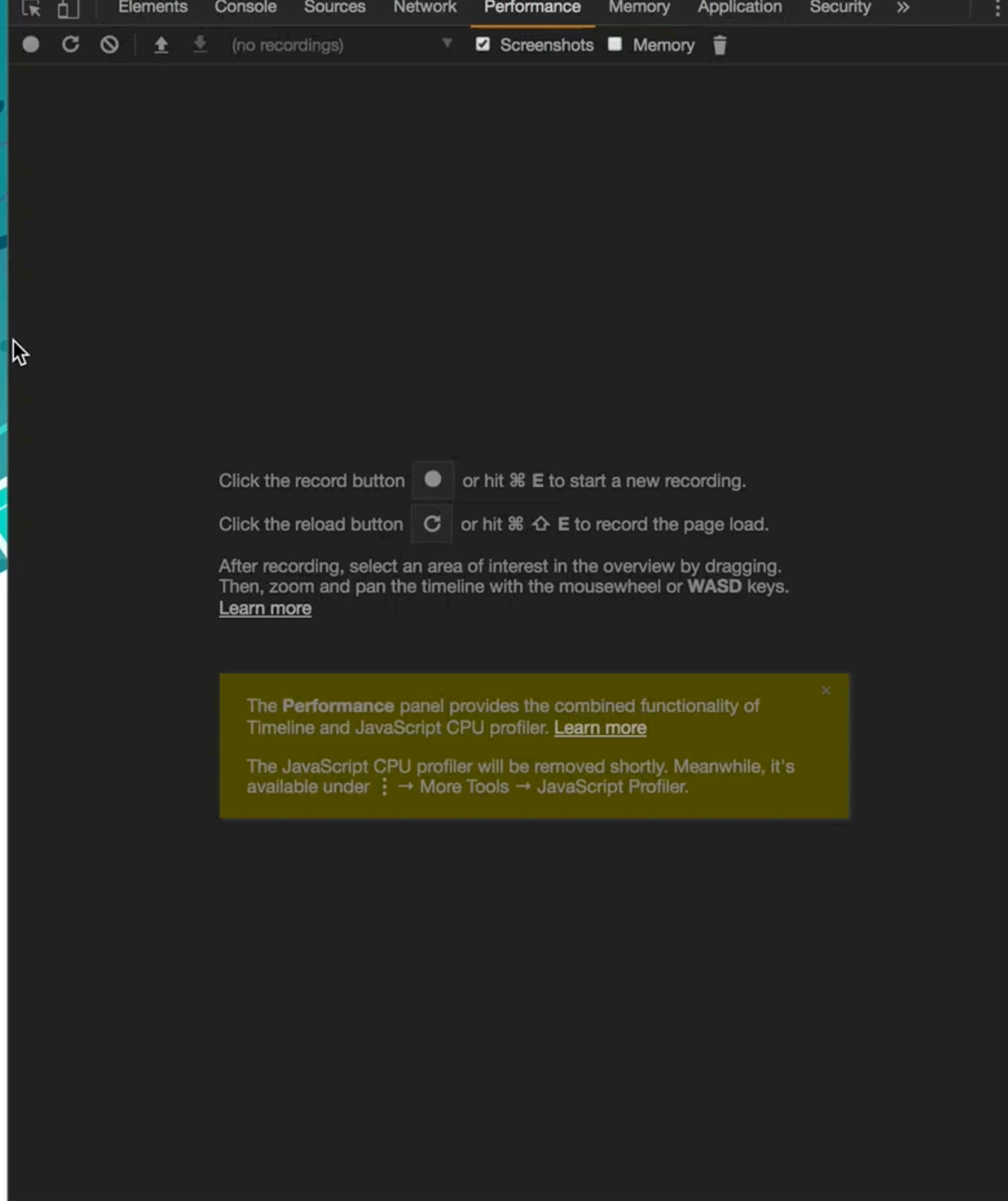
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(no recordings)
Screenshots
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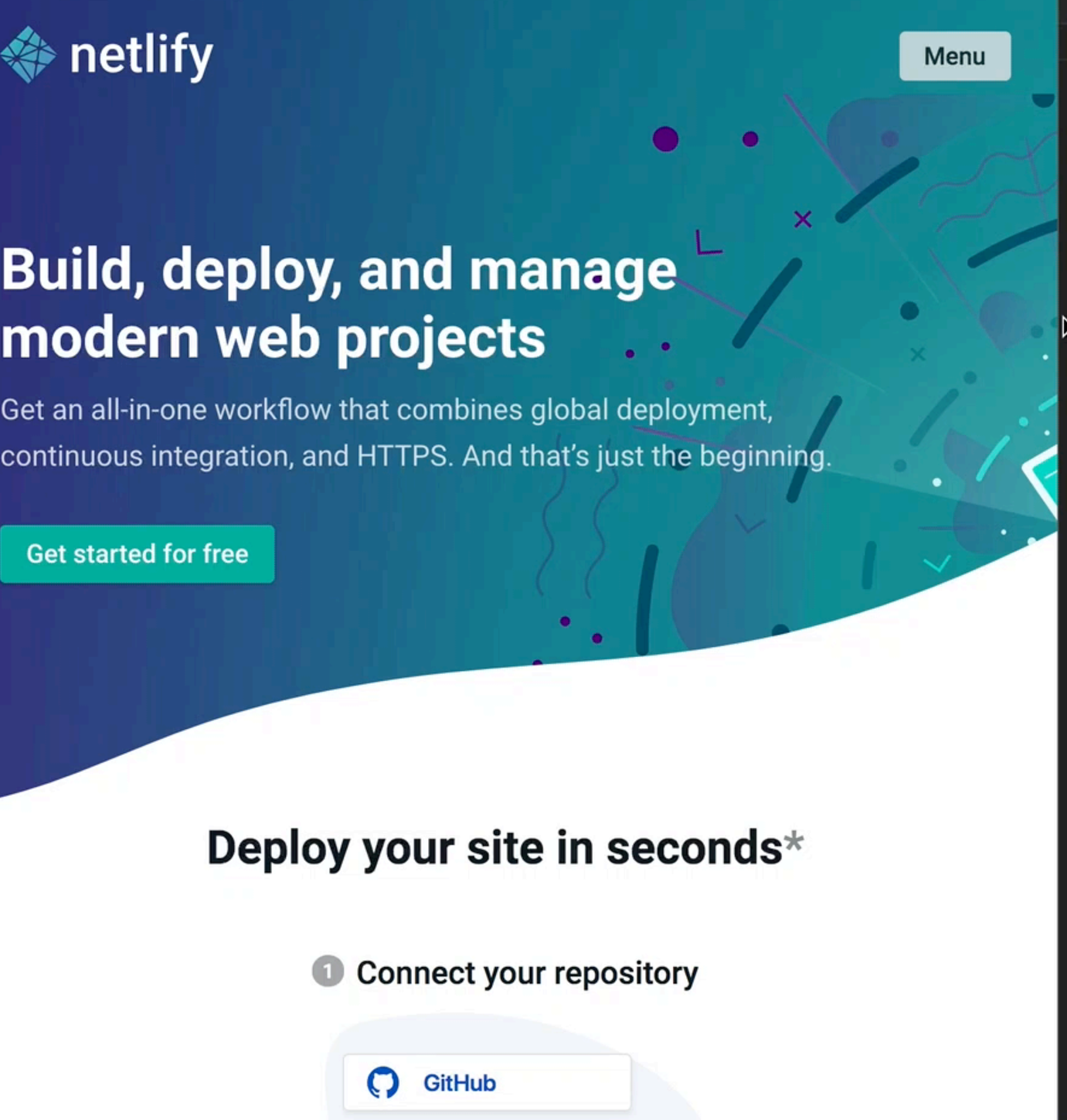
After recording, select an area of interest in the overview by dragging. Then, zoom and pan the timeline with the mousewheel or WASD keys.
Learn more
The Performance panel provides the combined functionality of Timeline and JavaScript CPU profiler. Learn more
The JavaScript CPU profiler will be removed shortly. Meanwhile, it's available under ⋮ → More Tools → JavaScript Profiler.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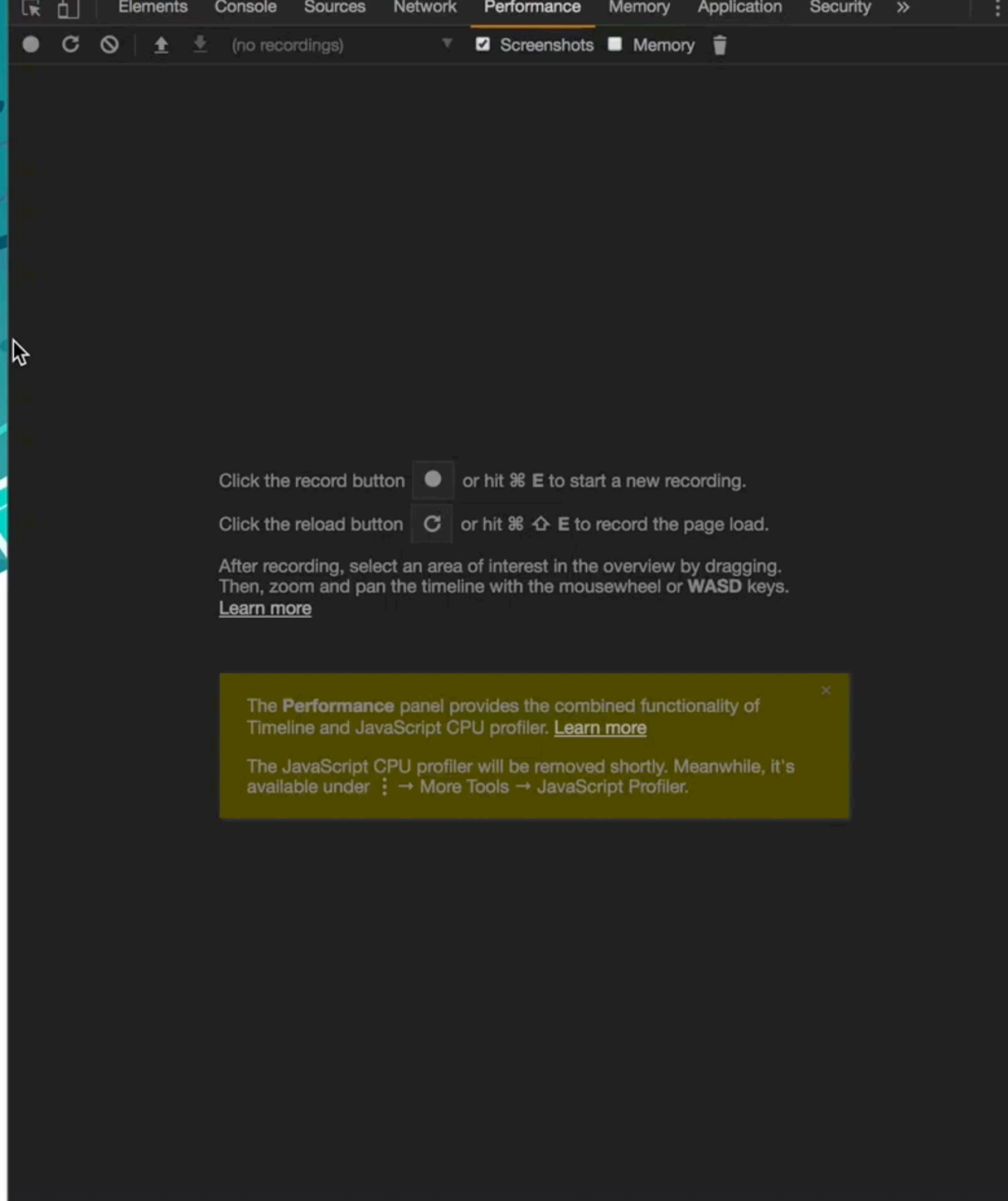
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Time to First Paint

Time to First Paint
&
Time to First Contentful Paint

Time to First Paint

Time to First Paint

The point where the browser renders *anything* to the screen.

Time to First Contentful Paint

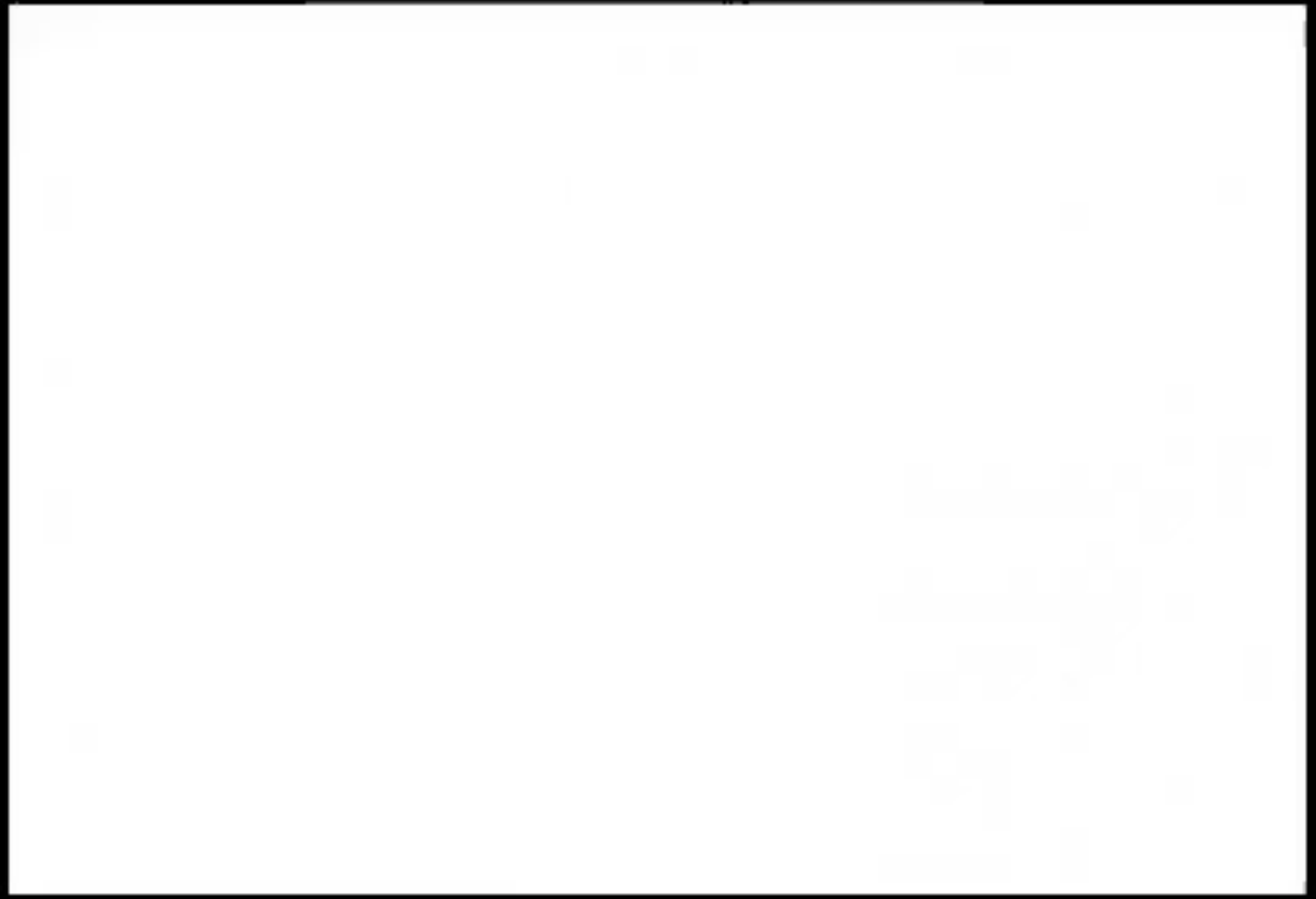
Time to First Contentful Paint

The point where the browser renders the *first* bit of content from the DOM.

www.netlify.com/

First Paint
1.4s

First Contentful Paint
1.4s



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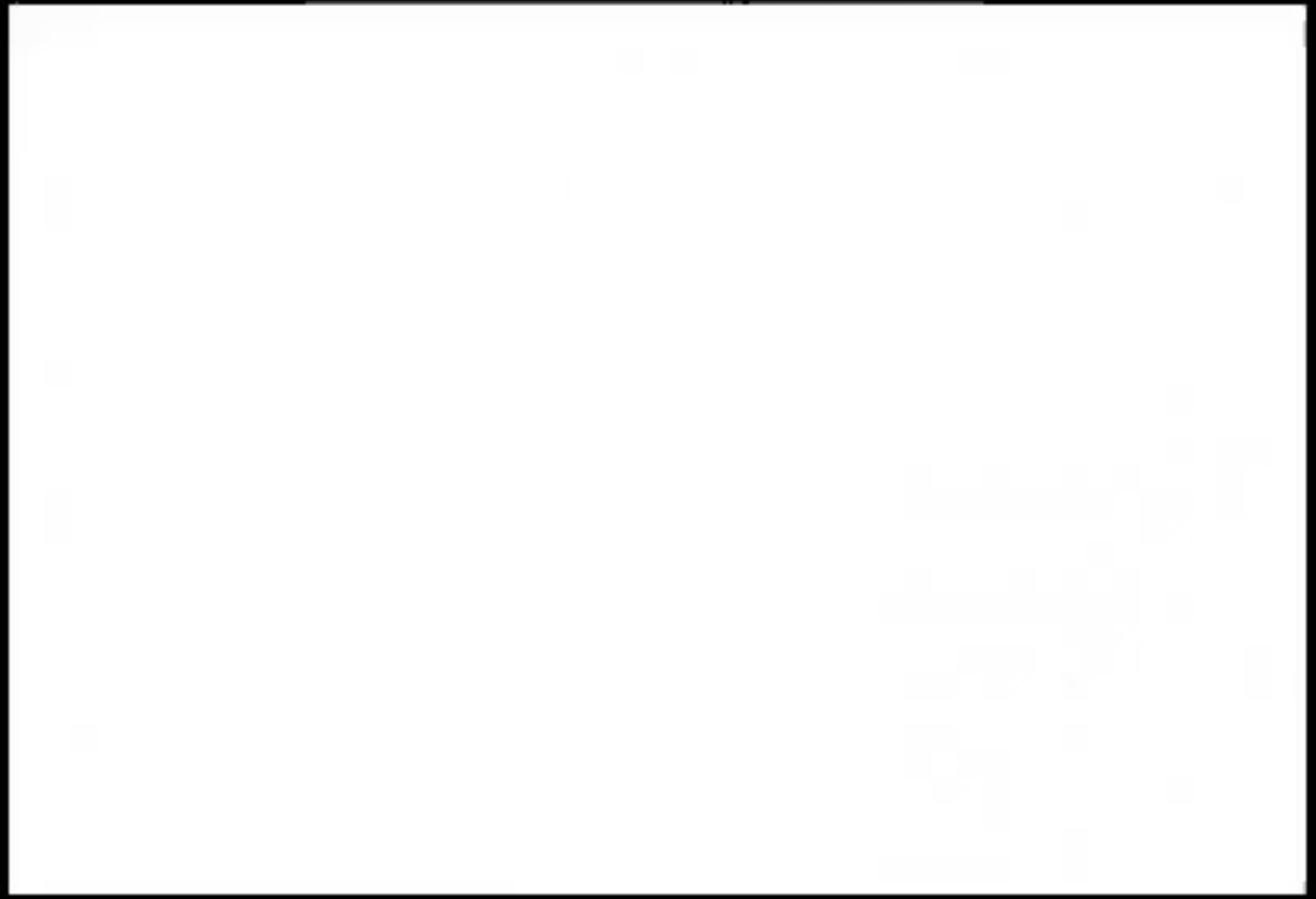
www.netlify.com/

First Paint
1.4s

First Contentful Paint
1.4s



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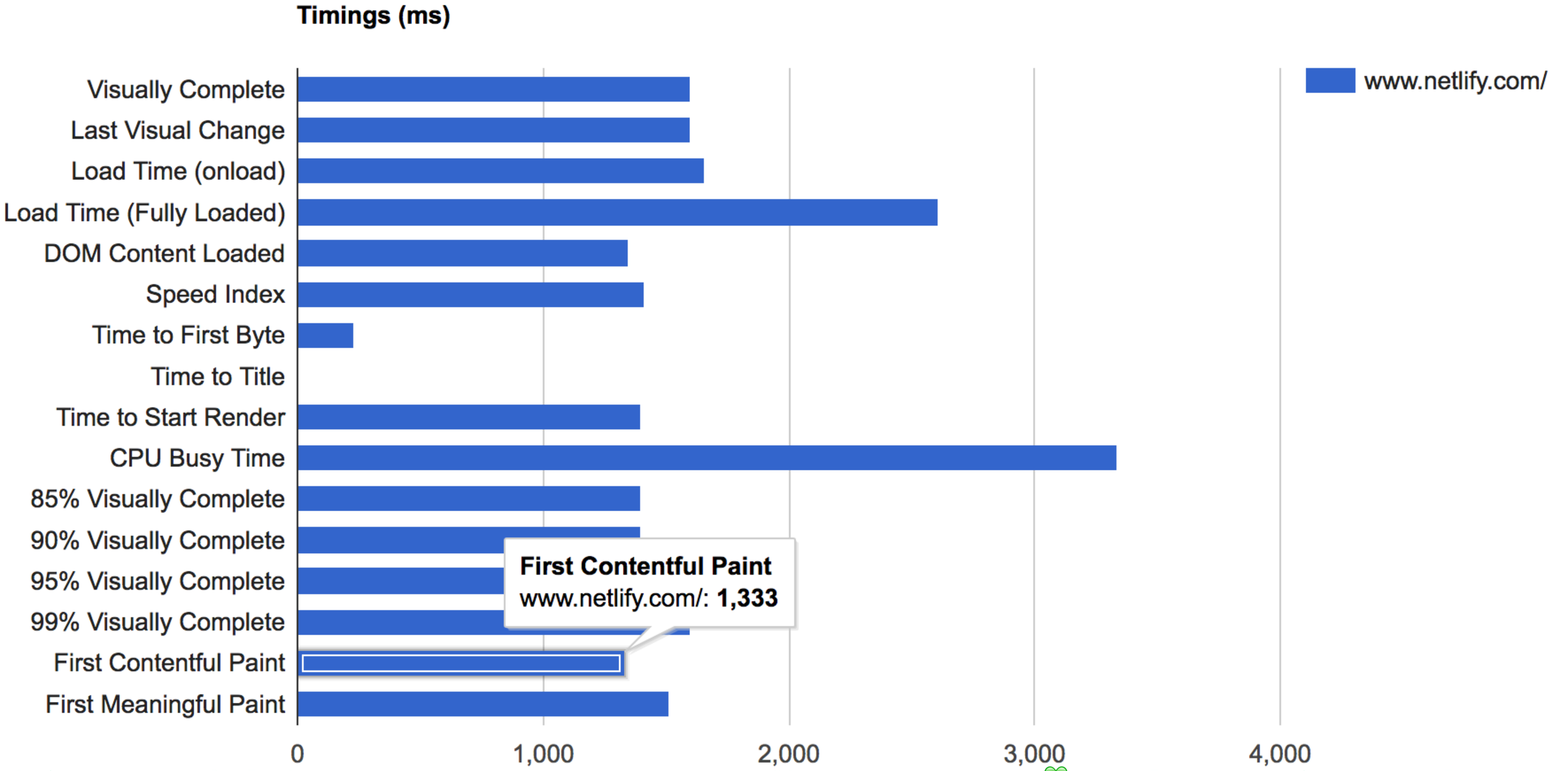
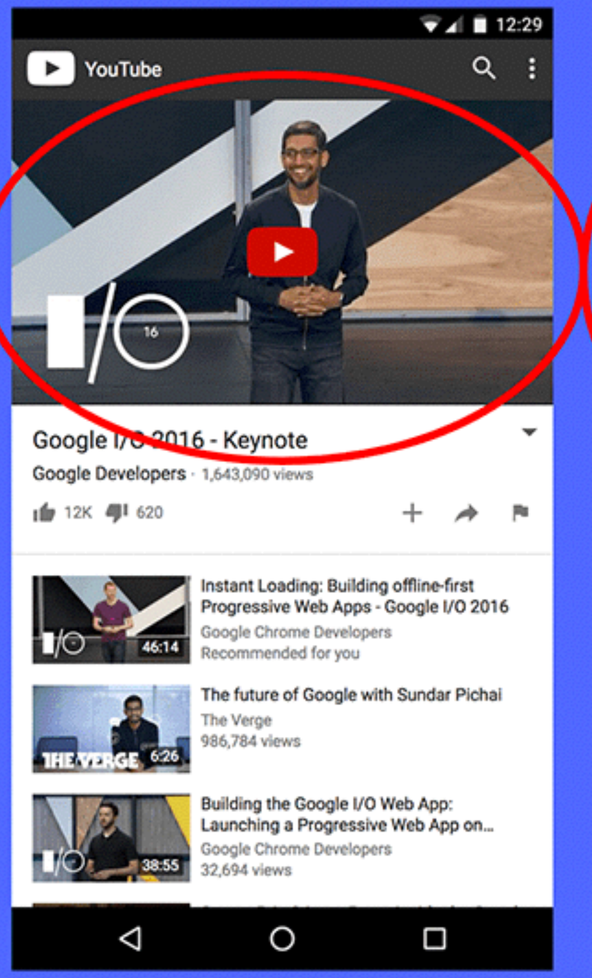
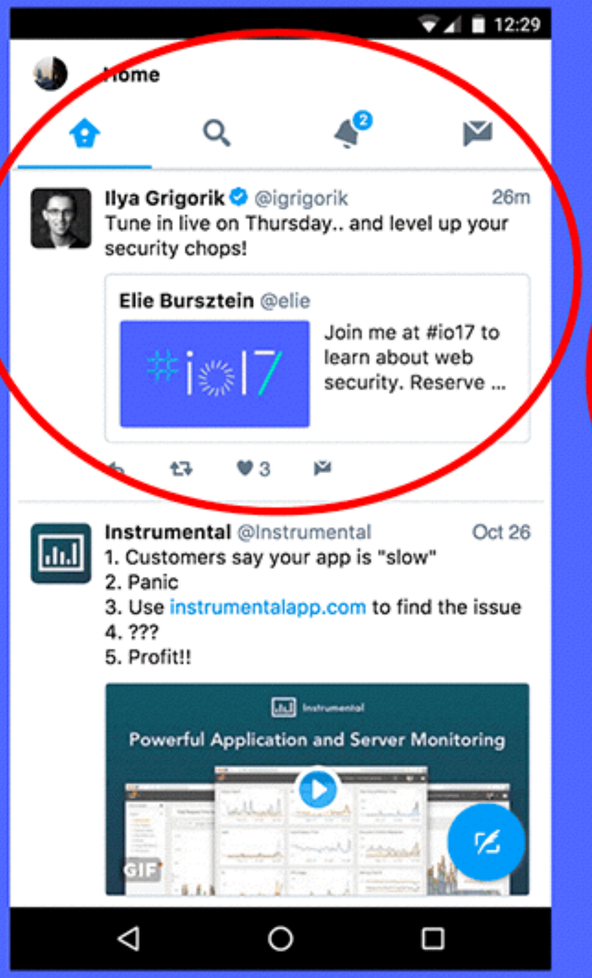
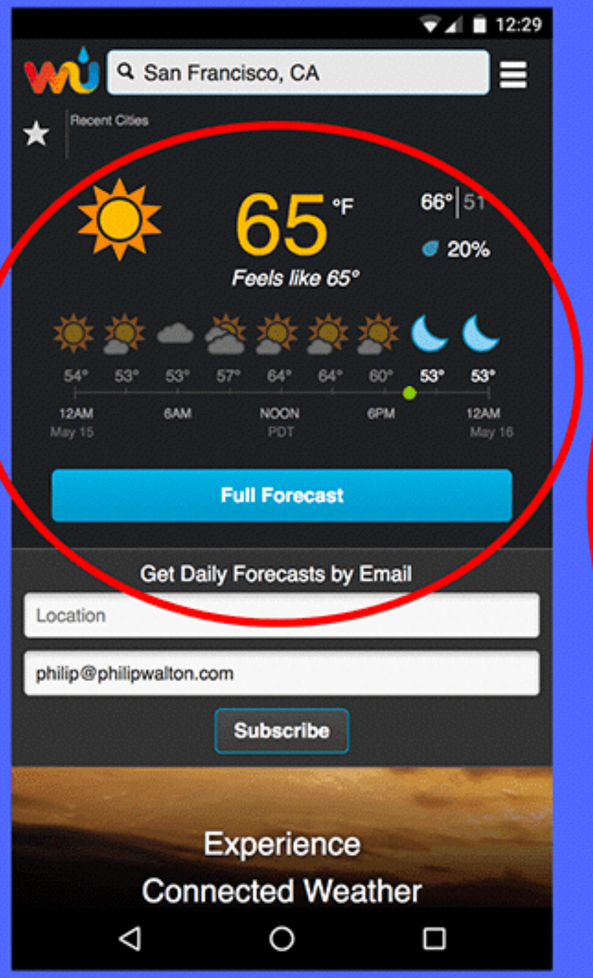
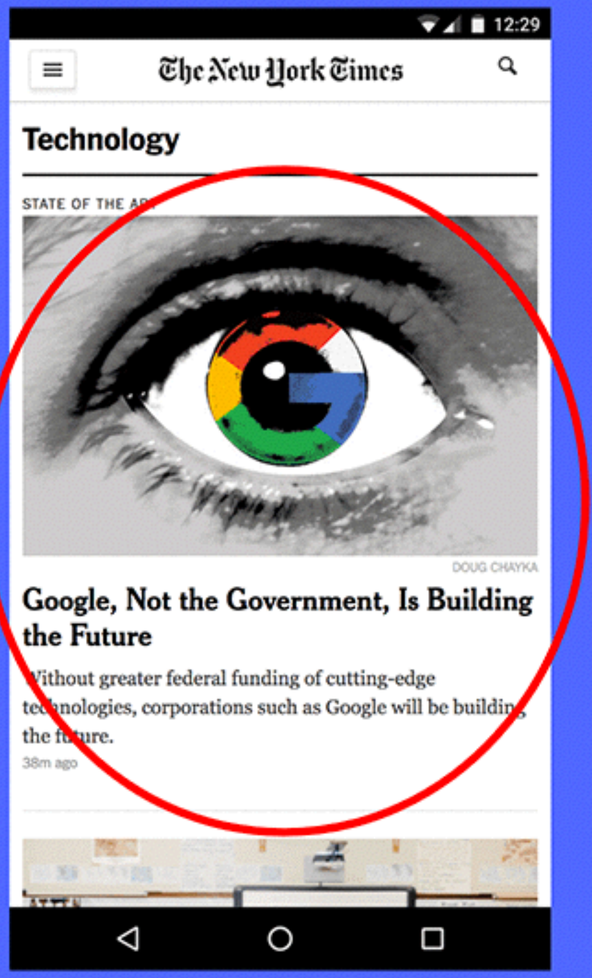

Timings (ms)
www.netlify.com/
Visually Complete
Last Visual Change
Load Time (onload)
Load Time (Fully Loaded)
DOM Content Loaded
Speed Index
Time to First Byte
Time to Title
Time to Start Render
CPU Busy Time
85% Visually Complete
90% Visually Complete
95% Visually Complete
99% Visually Complete
First Contentful Paint
First Meaningful Paint
First Contentful Paint
www.netlify.com/: 1,333
0
1,000
2,000
3,000
4,000

Time to First Meaningful Paint







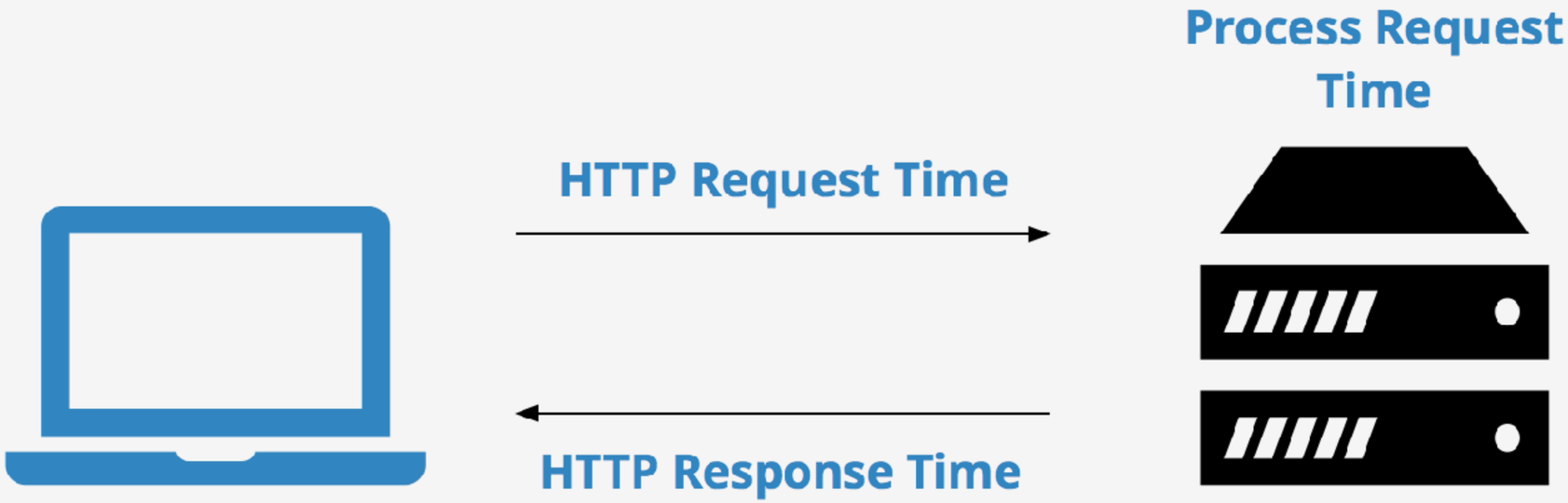


https://bit.ly/2HVcwvP

Time to First Byte

I AM HUNGRY!

I AM HUNGRY!

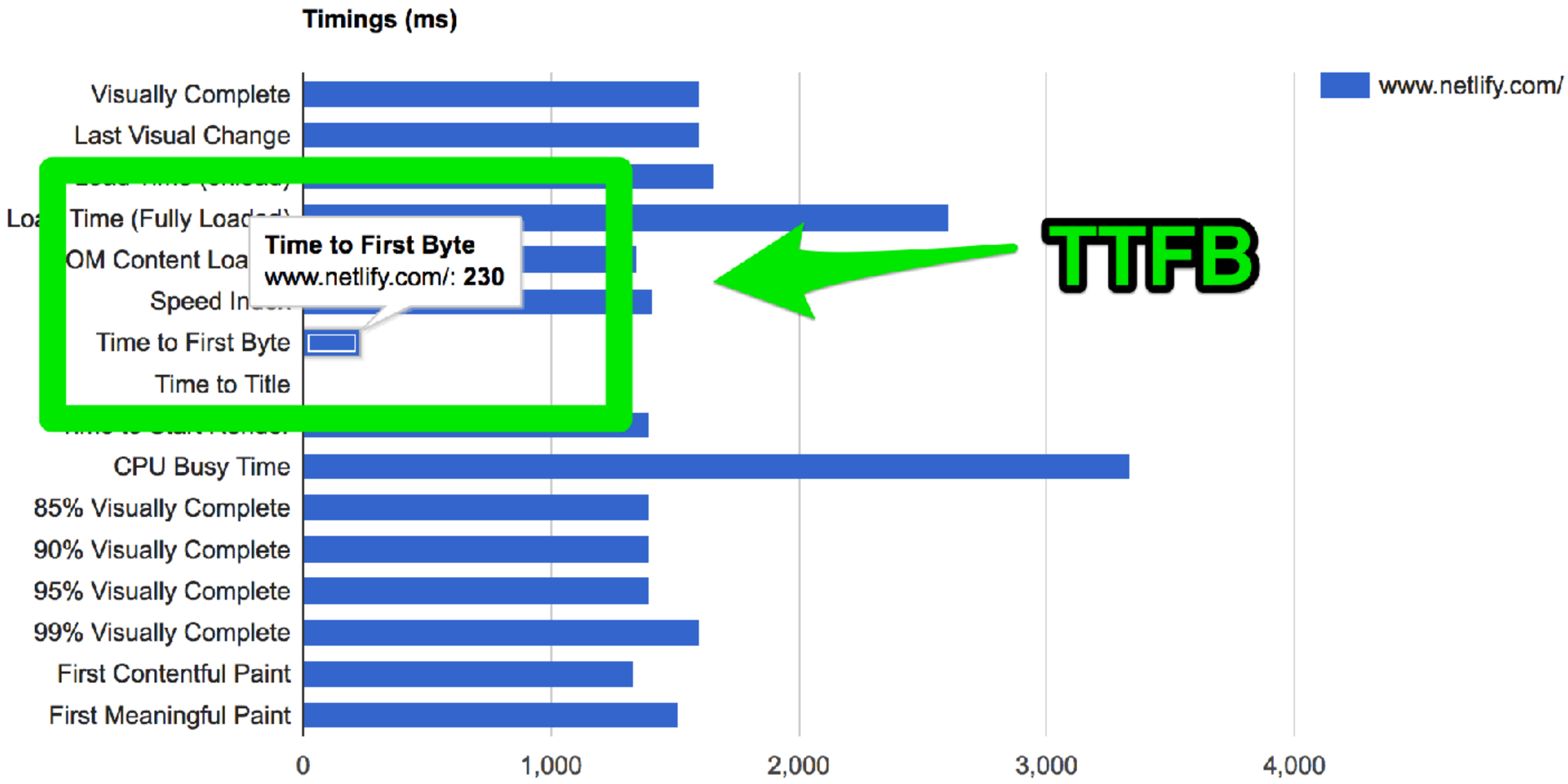


What is TTFB?

HTTP Request Time + **Process Request Time** + **HTTP Response Time** = **TTFB**

https://www.keycdn.com/support/what-is-ttfb/

TTFB
230ms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www.netlify.com/
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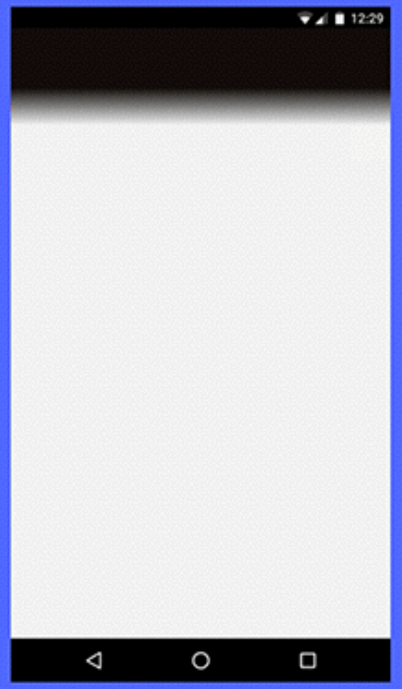
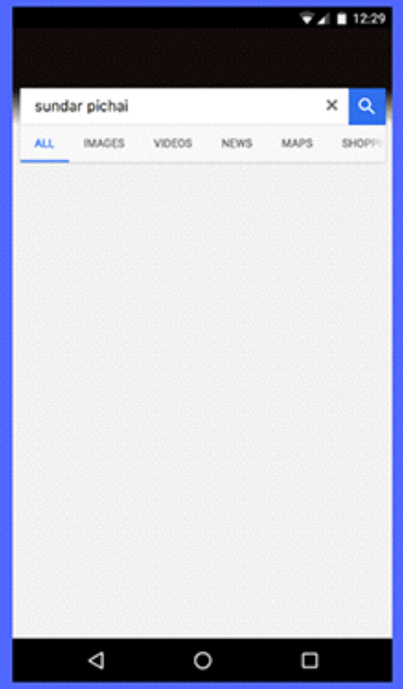
First Contentful Paint
First Meaningful Paint
Time to First Byte
www.netlify.com/: 230
TTFB
0
1,000
2,000
3,000
4,000

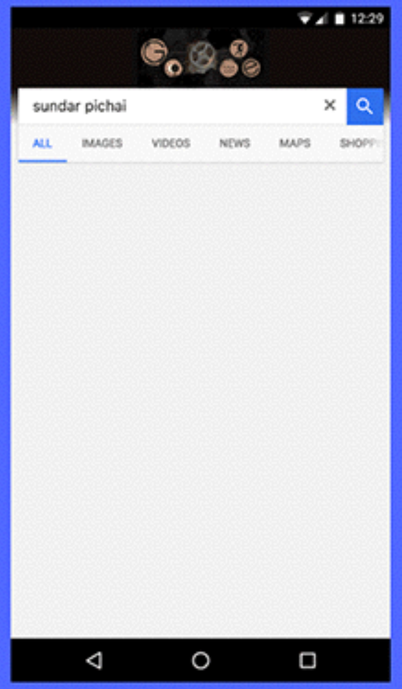
Time to Interactive

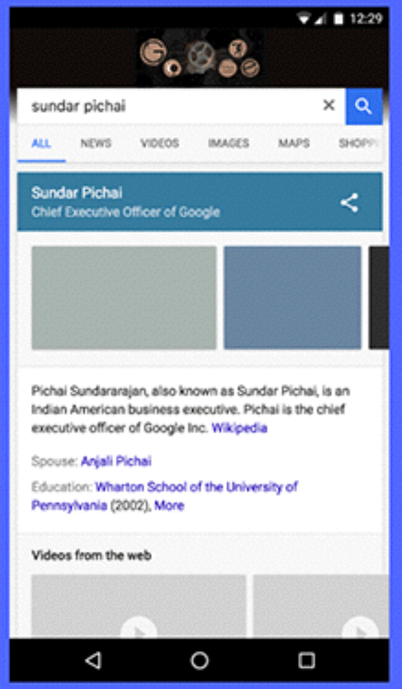


First Paint
(FP)

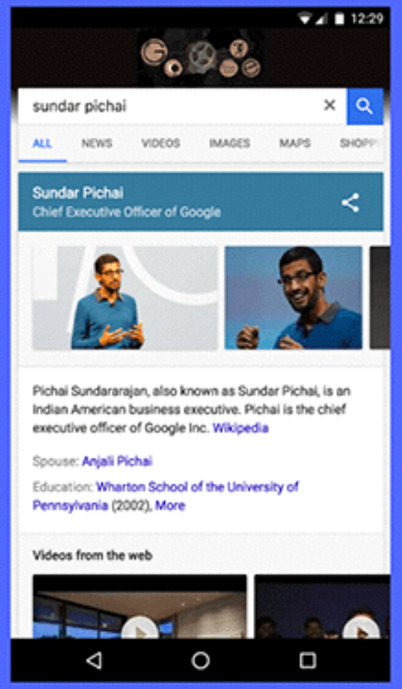


First Contentful
Paint (FCP)

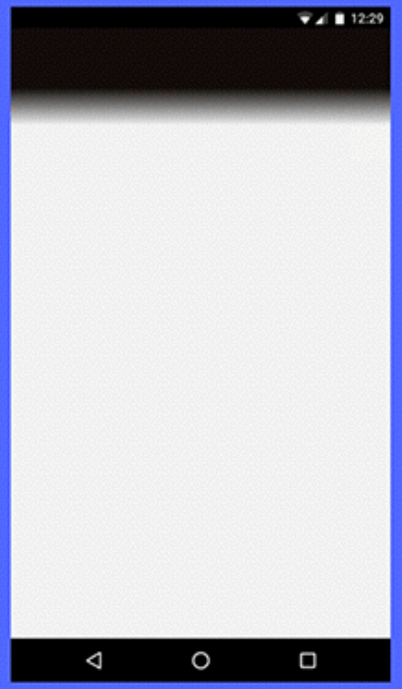




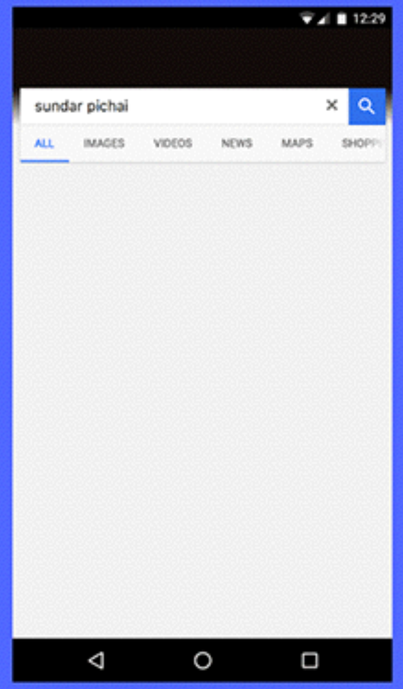
First Meaningful
Paint (FMP)



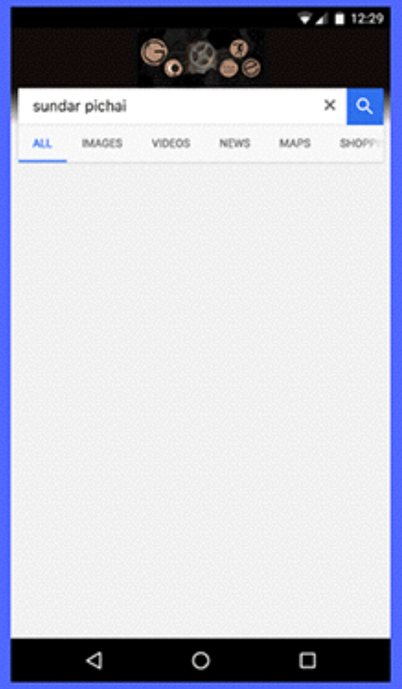
Time to
Interactive (TTI)

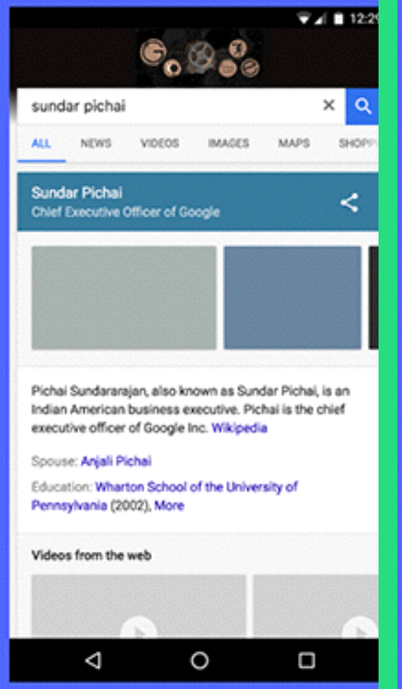


First Paint
(FP)

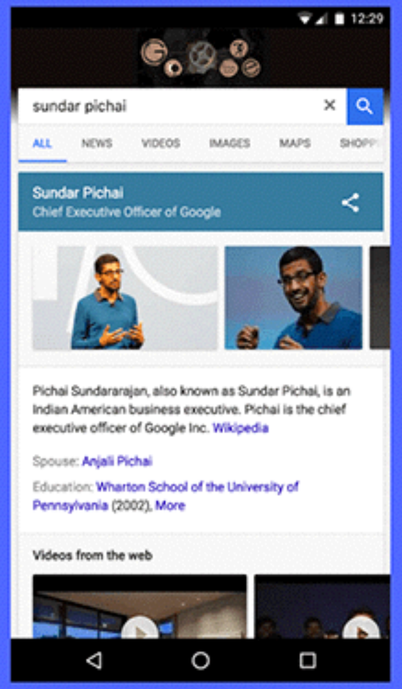


First Contentful
Paint (FCP)





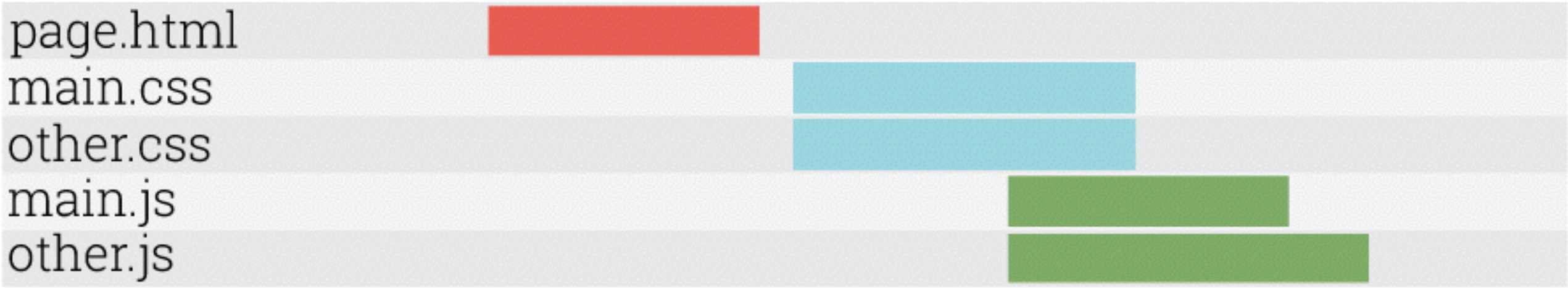
First Meaningful
Paint (FMP)

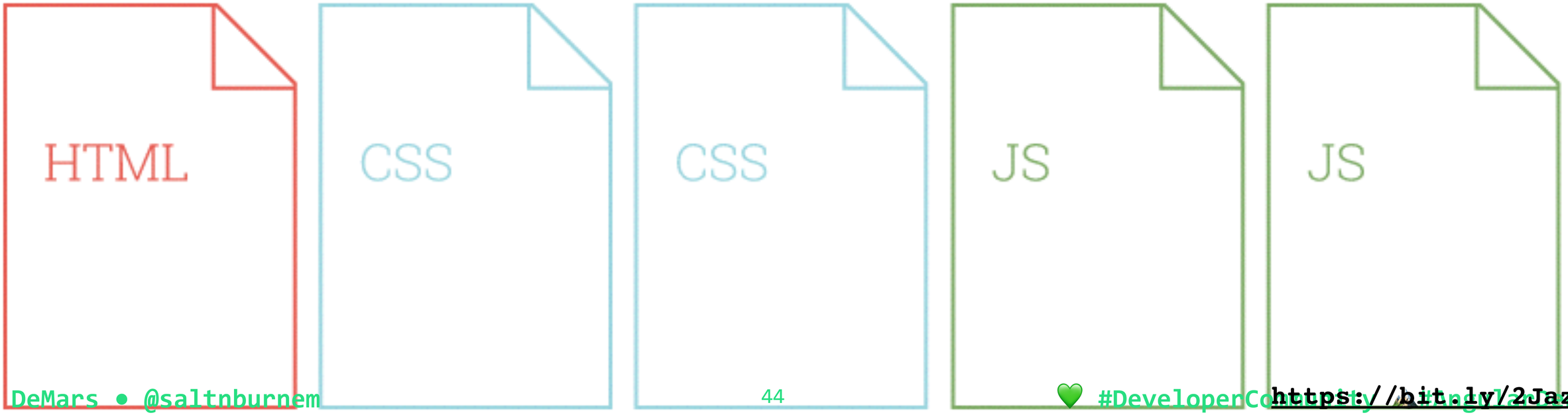


Time to
Interactive (TTI)

Why measure DOMContentLoaded?

Critical Rendering Path


page.html
main.css
other.css
main.js
other.js


HTML
CSS
CSS
JS
JS

Perceived Performance

Perceived performance is a measure of how quick a user *thinks* your site is, and that's often more important than its true speed.

- Matt West

Critical CSS

61 / 100 Speed

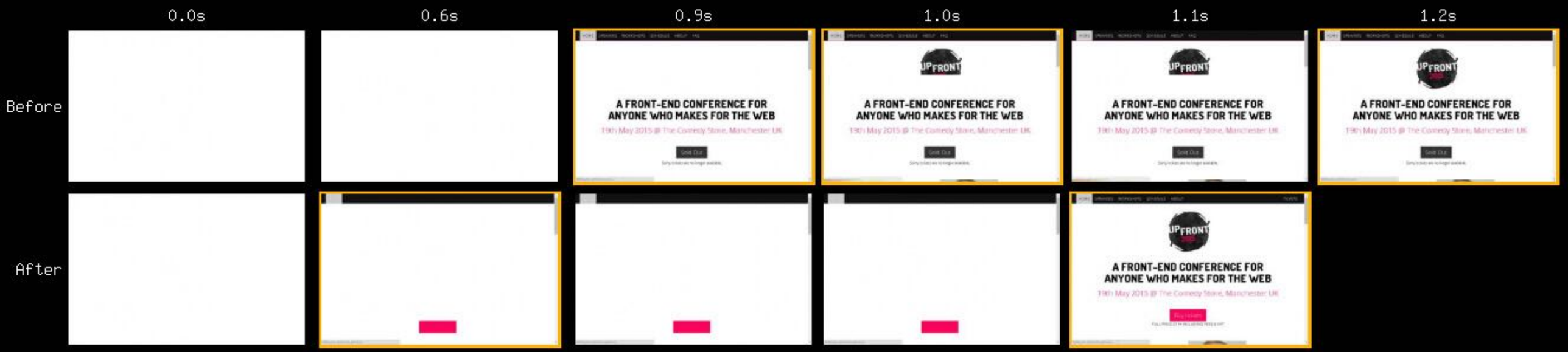
! Should Fix:

Eliminate render-blocking JavaScript and CSS in above-the-fold content

Your page has 5 blocking script resources and 6 blocking CSS resources. This causes a delay in rendering your page.

None of the above-the-fold content on your page could be rendered without waiting for the following resources to load. Try to defer or asynchronously load blocking resources, or inline the critical portions of those resources directly in the HTML.

https://www.smashingmagazine.com/2015/08/understanding-critical-css/



https://www.smashingmagazine.com/2015/08/understanding-critical-css/

Penthouse

criticalCSS

Critical

Skeleton Screens

"A skeleton screen is essentially a blank version of a page into which information is gradually loaded."

- Luke Wroblewski

"Users *don't care* about performance stats in terminal, they *do care* about what they see in front of them.”

- Callum Hart

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ES2018 AND THE ROAD AHEAD

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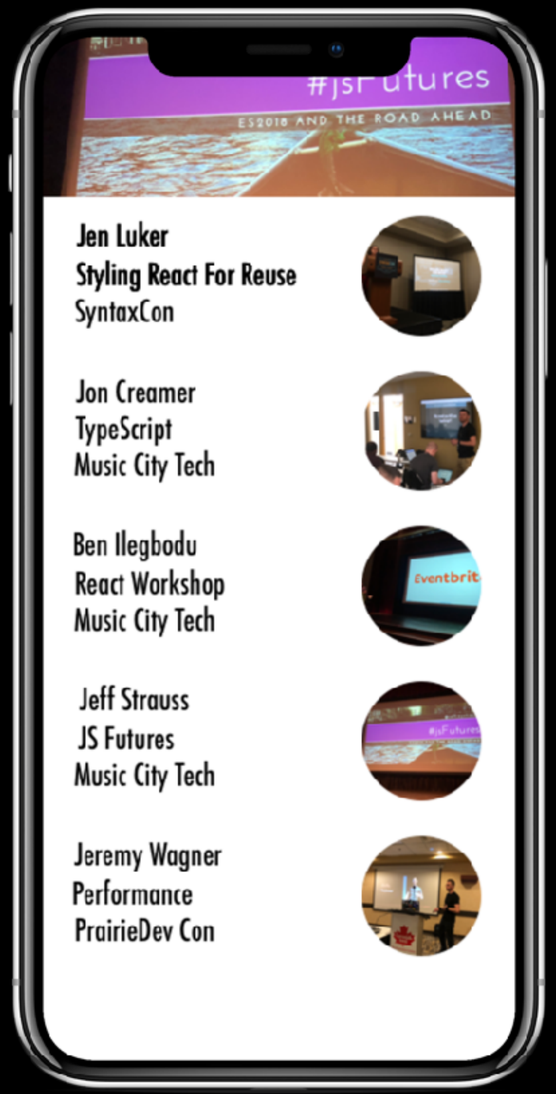
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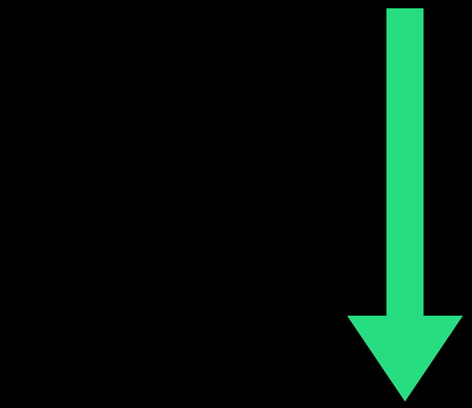
“Design for *operational transparency* by providing progress-UX that’s robust and meaningful.”

- Nick Babich

Great Info!



https://www.mobify.com/insights/designing-appearance-speed/

Fun Distractions

Offer distractions so users don’t get bored!

Offer distractions so users don’t get bored!

What did we learn?

What did we learn?

✅ Performance matters

What did we learn?

- ✅ Performance matters
- ✅ How to test performance on the front end

What did we learn?

- ✅ Performance matters
- ✅ How to test performance on the front end
- ✅ Different metrics we can measure

What did we learn?

- ✅ Performance matters
- ✅ How to test performance on the front end
- ✅ Different metrics we can measure
- ✅ Perceived performance

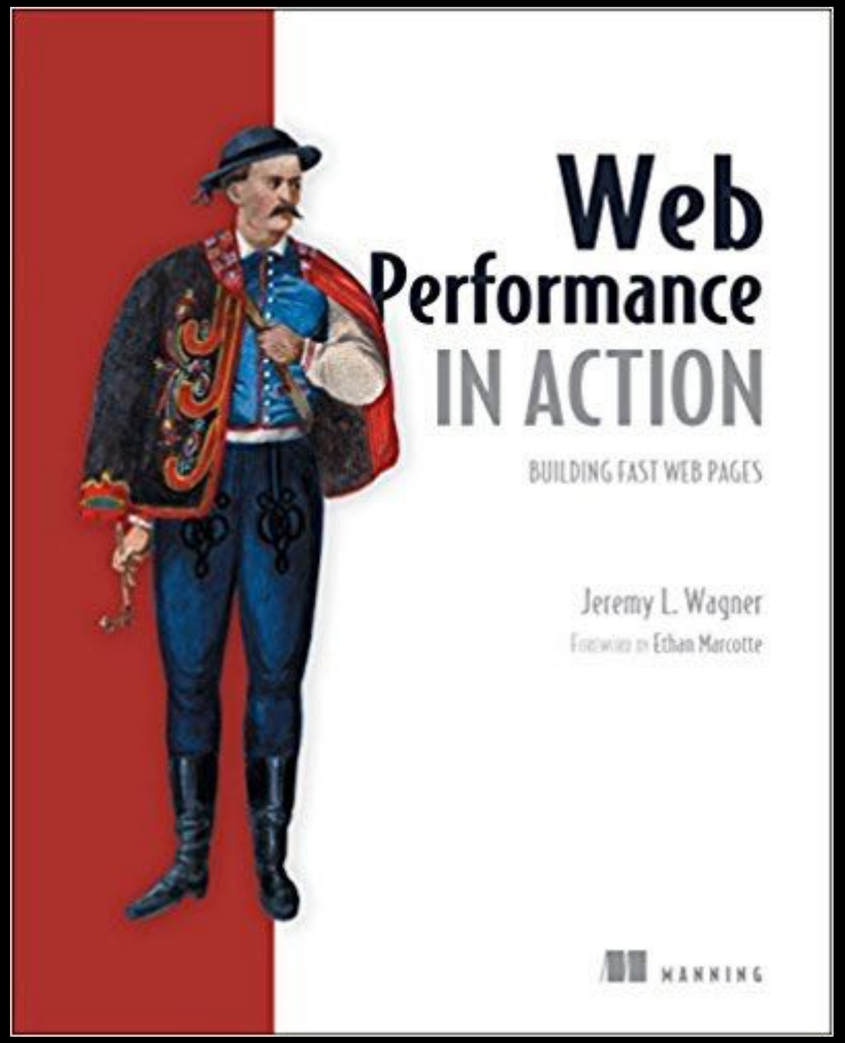
tumblrsavvy
I'm so freakin' exicted!

tumblrsavvy
I'm so freakin' exicted!

Resources

https://goo.gl/dqxsXi

Jeremy Wagner
@malchata



Jeremy Wagner
@malchata

Responsible JavaScript: Part 1

https://bit.ly/2uwST7U

Part 2

https://bit.ly/2K5zZO2

Thanks!

Chris DeMars • @saltnburnem