

FMP, TTI, WTF? 🤔

Making Sense of Performance Metrics

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Performance metrics can be
confusing 😞

Why is performance important?

In Nigeria, the average cost of 1GB of data is N850, **3% of minimum wage.**

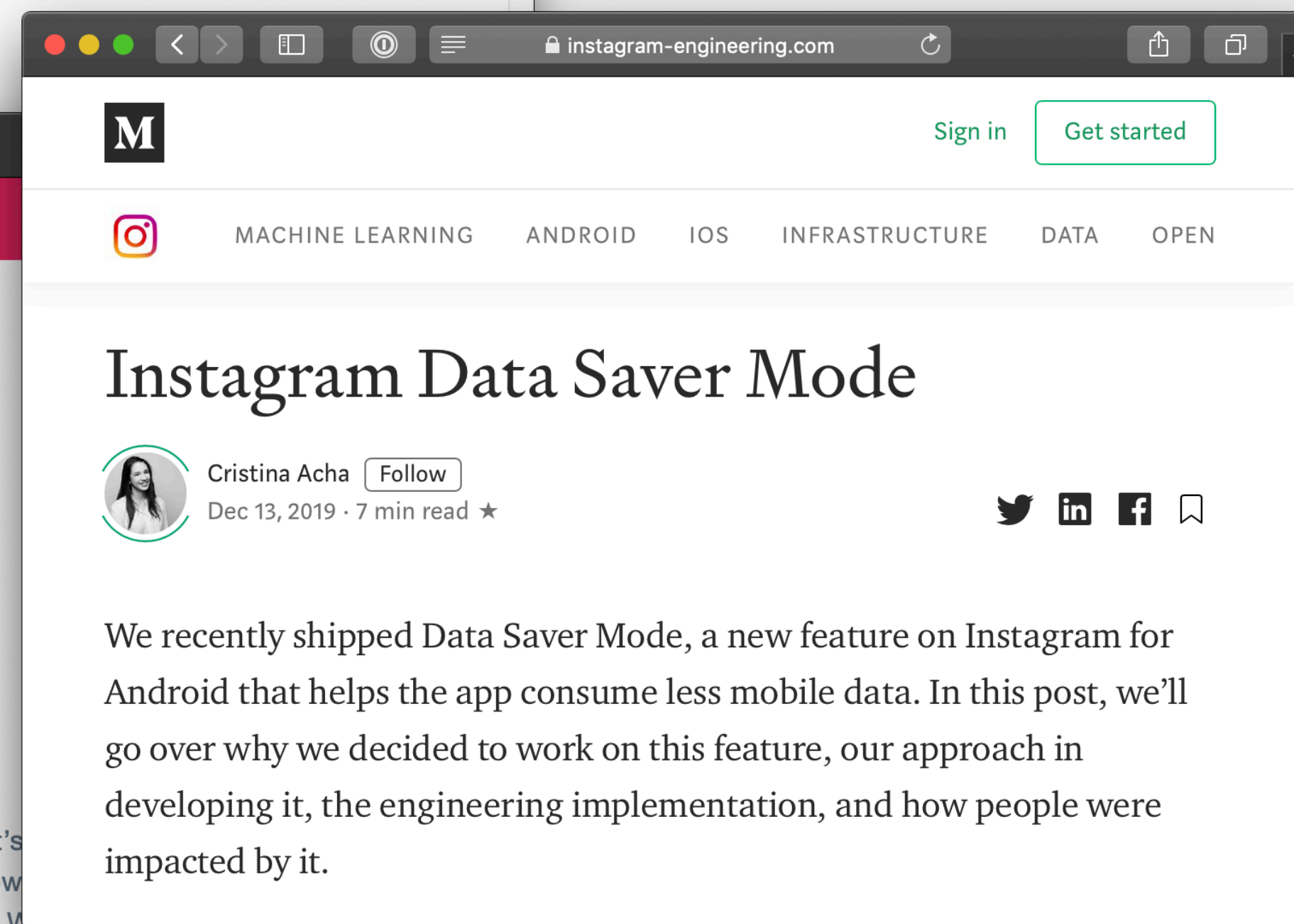
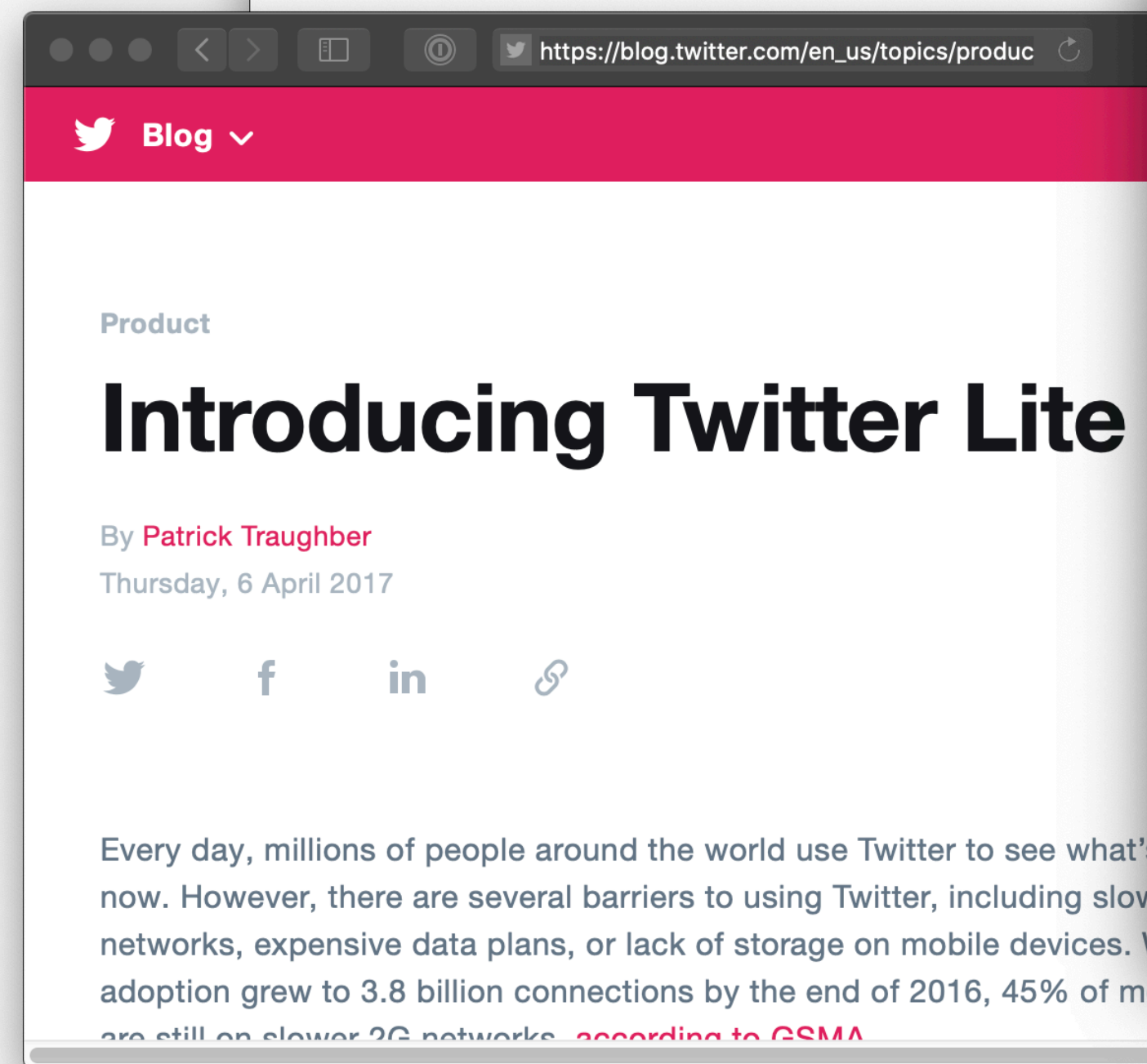
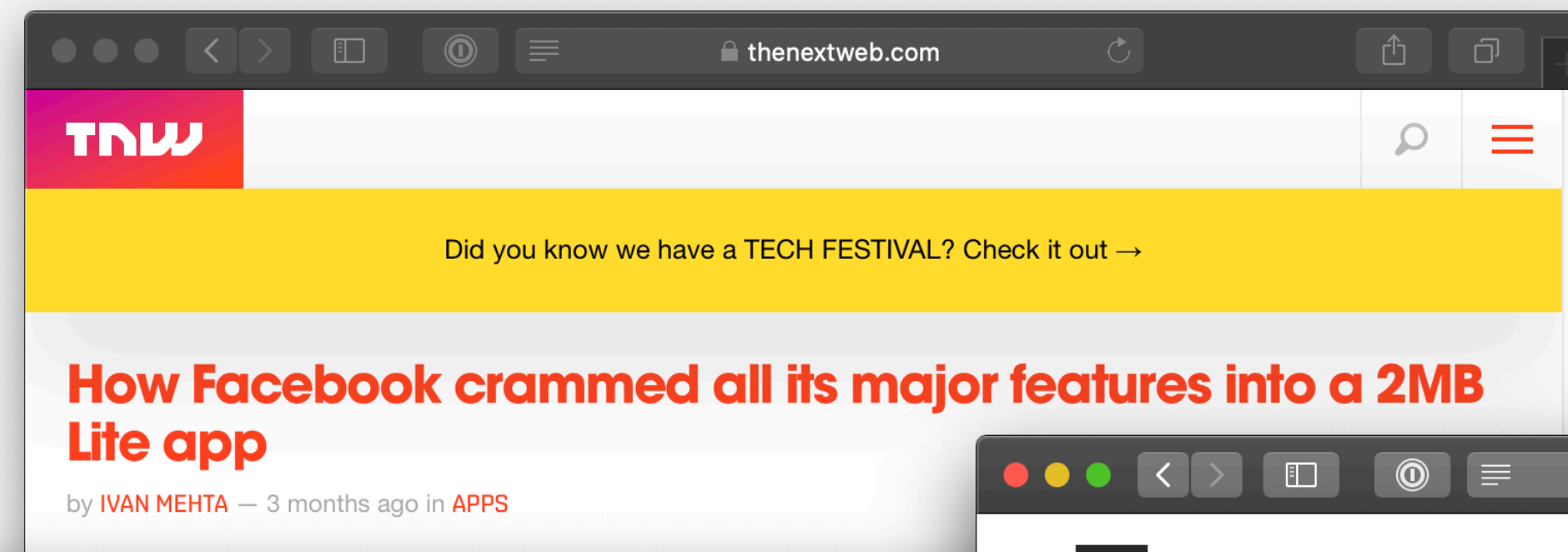
That's more than **1 hour of work** 🤯

<https://www.ispreview.co.uk/index.php/2019/03/uk-ranked-136th-out-of-230-countries-for-its-high-mobile-data-price.html>

In the US, minimum wage employees
have to work almost **2 hours** to earn
enough for 1GB of mobile data 🤯

<https://www.ispreview.co.uk/index.php/2019/03/uk-ranked-136th-out-of-230-countries-for-its-high-mobile-data-price.html>

Having a performant website is a
competitive advantage 😎



Having a performant website is just like
having **good service** in the physical world..

...but your customers are less patient 😡



Users are **90%** more likely to
abandon a page that takes up to
5 seconds to load

thinkwithgoogle.com/marketing-resources/data-measurement/mobile-page-speed-new-industry-benchmarks



What does ***performant actually mean*** for your site?

Browser requests page

Page fully loaded



15 seconds 😡

Browser requests page

Page fully loaded



7 seconds 🙄

Browser requests page

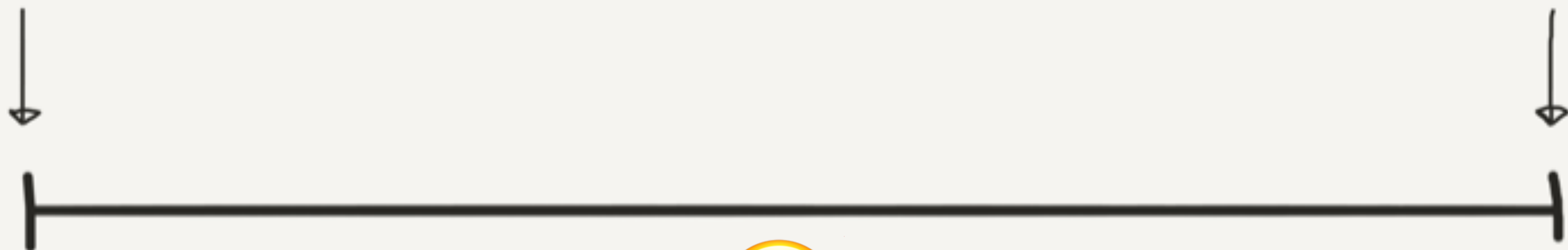
Page fully loaded



<2 seconds 🎉

Browser requests page

Page fully loaded



The **onLoad** event captures when the document and all its resources have finished loading.




```
var start = Date.now();
```

```
window.addEventListener('load', function() {  
    var end = Date.now();  
    var loadTime = end - start;  
});
```

```
var start = Date.now();

window.addEventListener('load', function() {
    var end = Date.now();
    var loadTime = end - start;
});
```

```
var start = Date.now();

window.addEventListener('load', function() {
    var end = Date.now();
    var loadTime = end - start;
});
```

The **DOMContentLoaded** event captures when the Document Object Model has been constructed.



```
var start = Date.now();
```

```
window.addEventListener('DOMContentLoaded', function() {
```

```
    var end = Date.now();
```

```
    var loadTime = end - start;
```

```
});
```






Max Potential First Input Delay

Largest Contentful Paint

First Paint

First Input Delay

Total Blocking Time

First Contentful Paint

Time to Interactive

First Meaningful Paint

Visually Complete

Cumulative Layout Shift

Time to First Byte

Is it **happening**?

Is it **useful**?

Is it **usable**?

Is it **delightful**?

web.dev/user-centric-performance-metrics

Is it **happening**?

Time to First Byte

First Paint

First Contentful Paint

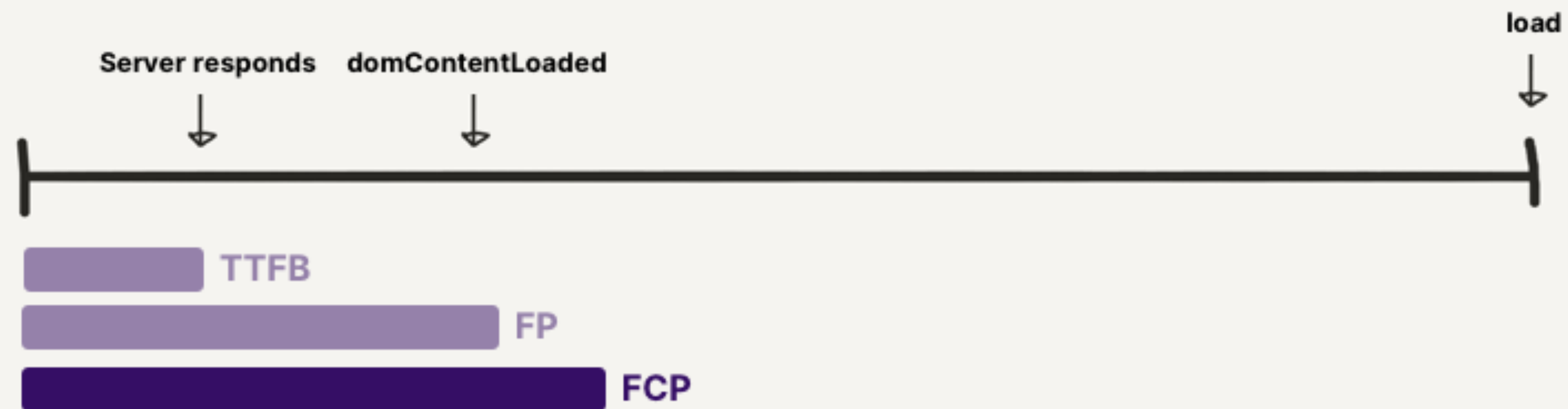
Time to First Byte measures the time from when the browser requests a page to the first byte of the page being received.



First Paint measures the time when the first pixel is painted on the screen.



First Contentful Paint measures the time when the first piece of content from the DOM is rendered.



Is it **useful**?

Largest Contentful Paint
Visually Complete
Speed Index

Largest Contentful Paint, a successor to First Meaningful Paint, measures the time when the largest piece of content within the viewport is rendered.



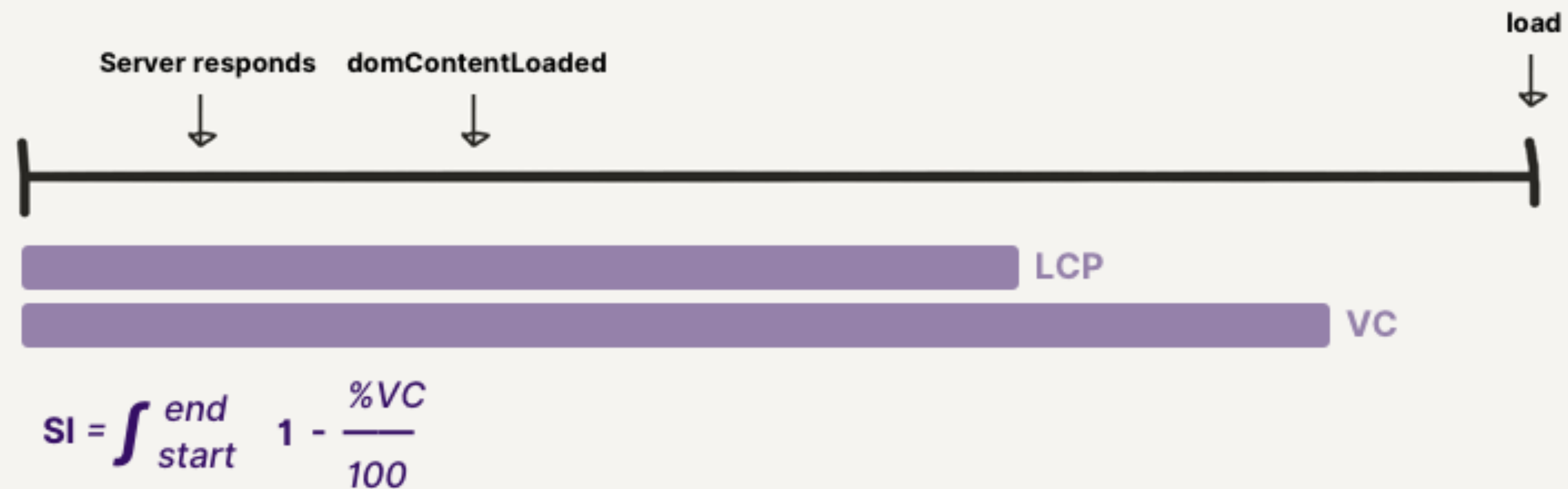
👉 First Meaningful Paint

👍 Largest Contentful Paint

Visually Complete measures the time taken for the content within the viewport to be fully rendered.



Speed Index is a score of how quickly visual content is rendered within the viewport.



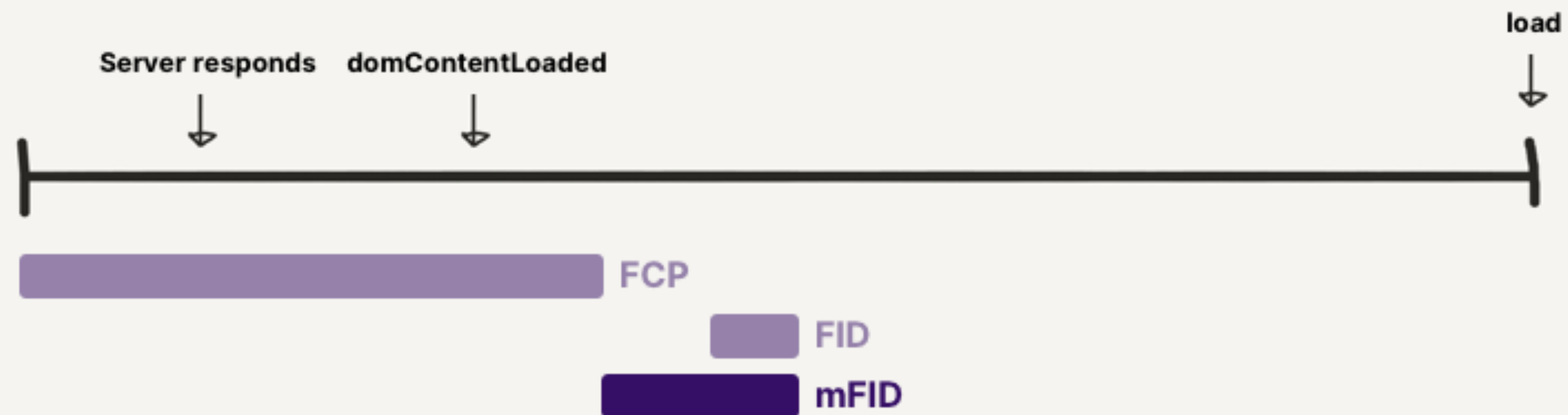
Is it **usable**?

First Input Delay & Max Potential First Input Delay
Total Blocking Time
Time to Interactive

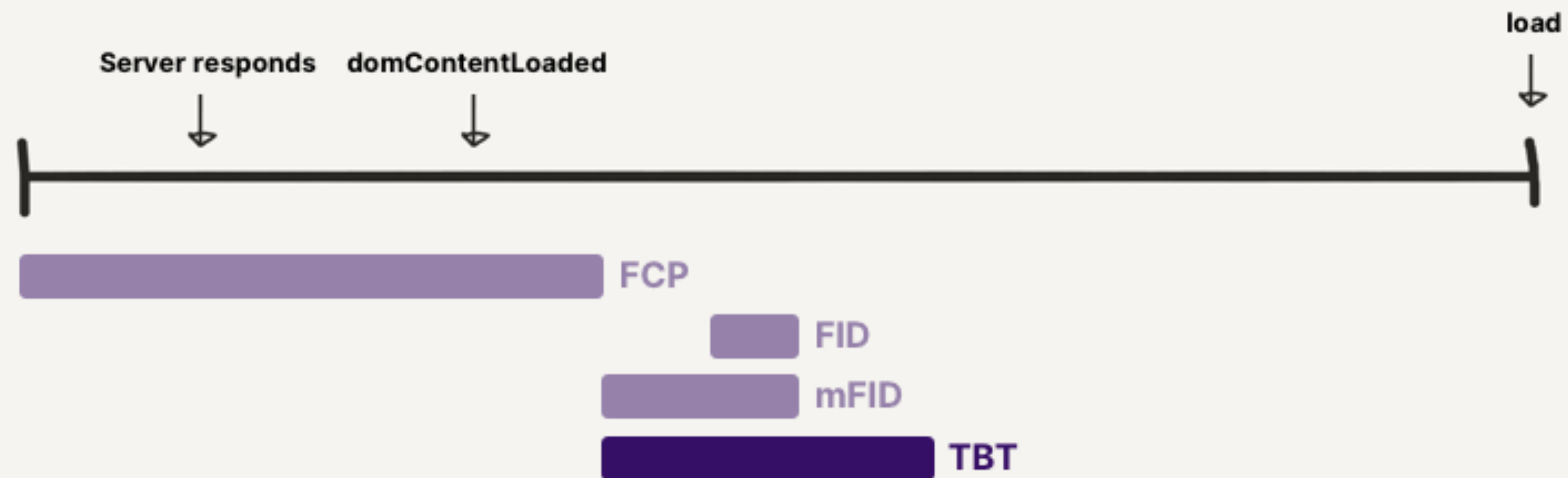
First Input Delay measures the delay between the time a user can attempt to interact with a part of the site, and the time that the interface is able to respond to that interaction.



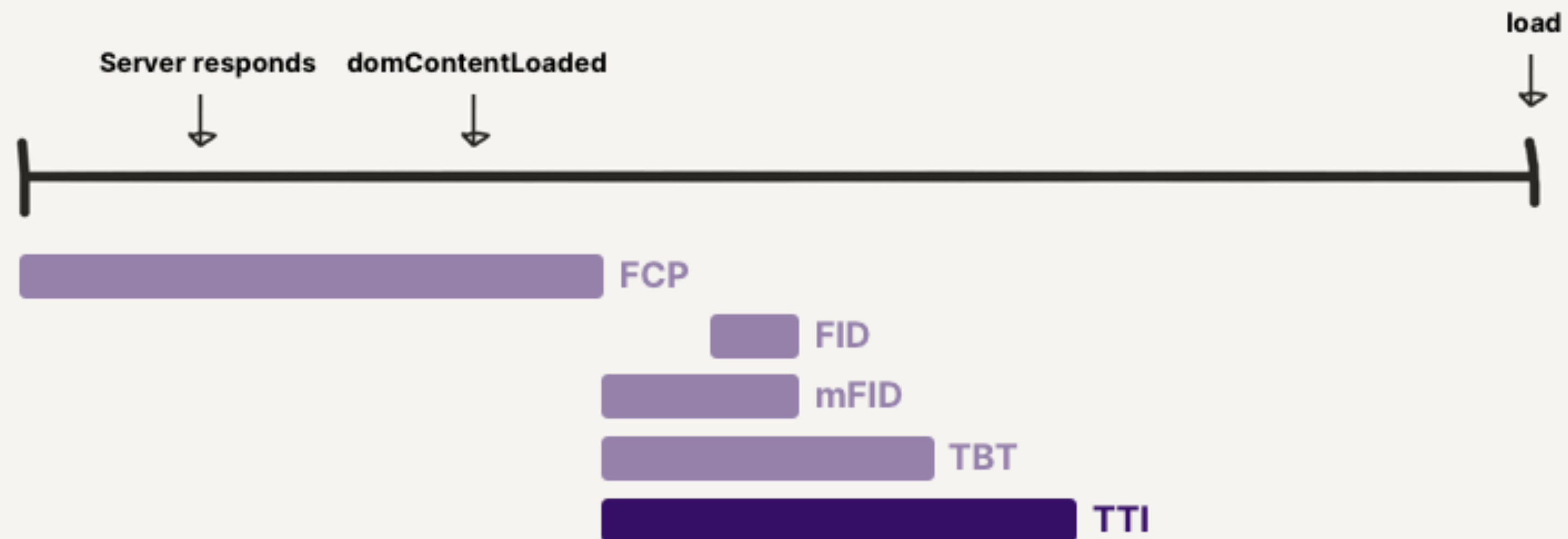
Max Potential First Input Delay measures the maximum possible First Input Delay based on the duration of the longest task.



Total Blocking Time measures the total duration of Javascript tasks between the First Contentful Paint and Time to Interactive.



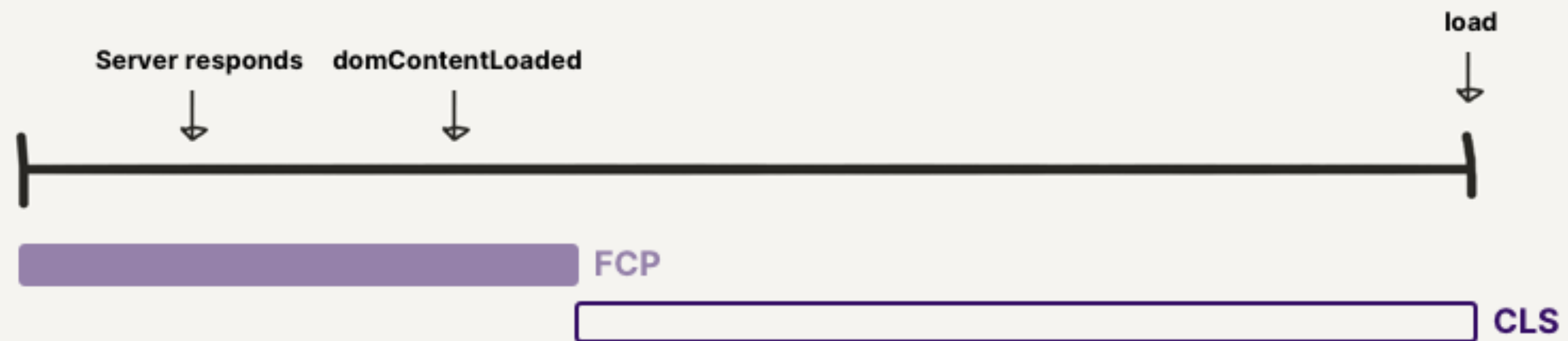
Time to Interactive measures the time when the main thread has had up to 5 seconds with no network activity or JavaScript tasks.



Is it **delightful**?

Cumulative Layout Shift
Frame Rate

Cumulative Layout Shift measures the shifts in layout while a page is loading.



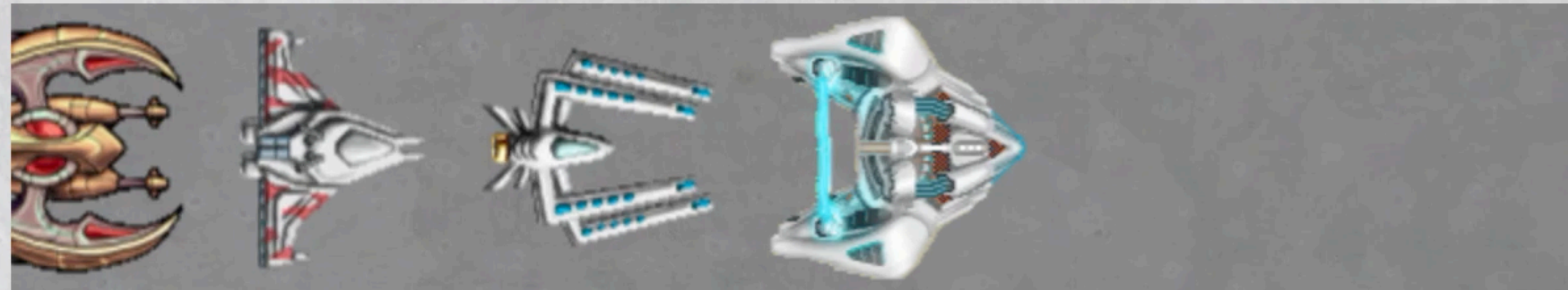
web.dev/cls

Frame rate is the rate at which the browser can produce new frames in response to interactions and/or animations.

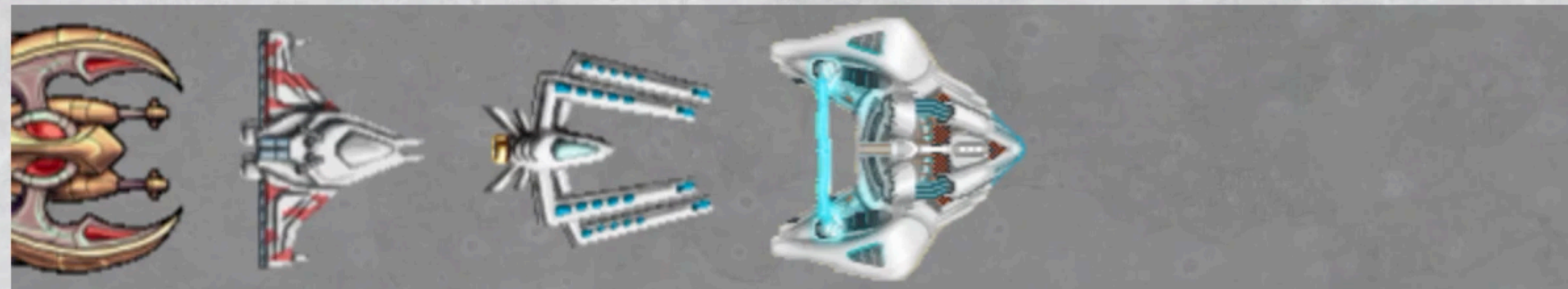
Jank Invaders

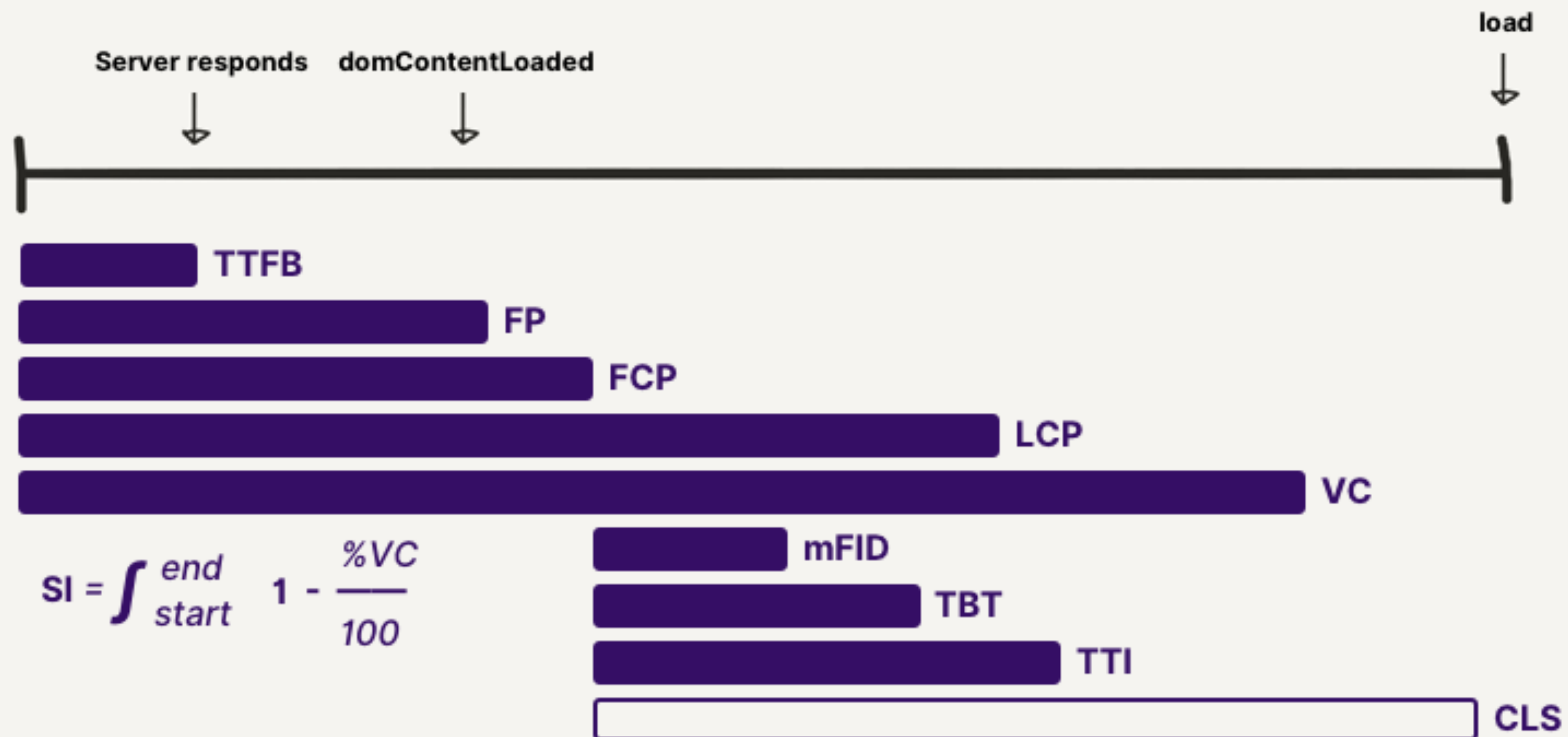
Oh noes! Our intergalactic space fleet has been infiltrated by ships of inferior framerate! Watch closely, and blast the spies to pieces as quickly as possible!

The good guys move like this:



Don't shoot those or you'll get a 10 second penalty. **The bad guys move like this:**







Max Potential First Input Delay

Largest Contentful Paint

First Paint

First Input Delay

Total Blocking Time

First Contentful Paint

Time to Interactive

First Meaningful Paint

Visually Complete

Cumulative Layout Shift

Time to First Byte

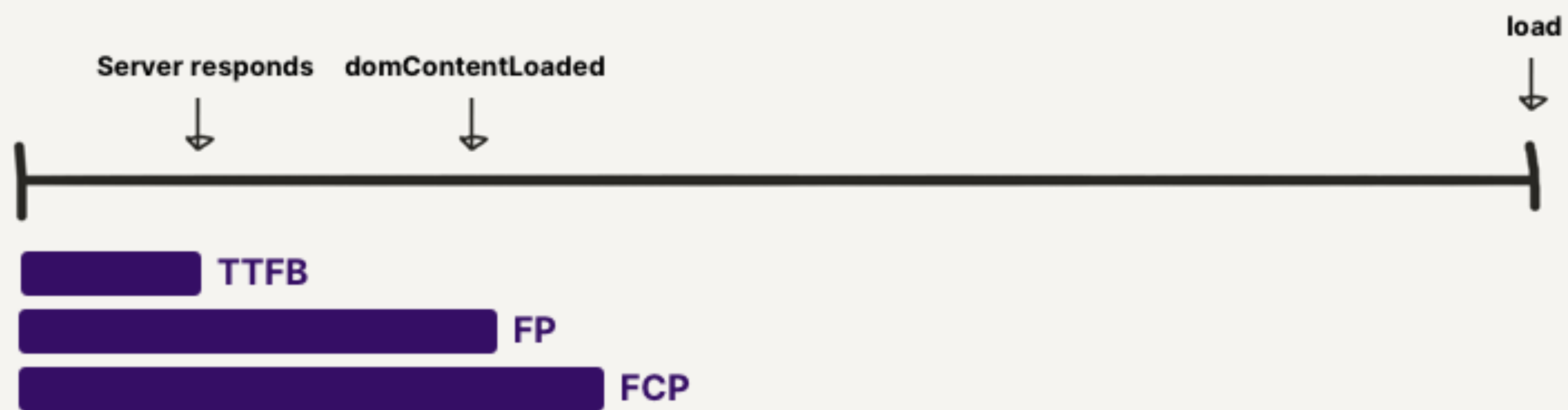
Which metrics do I start with?

Start general,
then dig deeper if needed



load
↓

FCP





Core Web Vitals

<https://web.dev/vitals>

LCP

Largest Contentful Paint

Is it **happening**?

Is it **useful**?

FID

First Input Delay

Is it **usable**?

CLS

Cumulative Layout Shift

Is it **delightful**?

A man with a beard, wearing a bright yellow suit and a white fedora-style hat, stands with his arms raised in a celebratory gesture. He is positioned in front of a large, stylized sun with orange and yellow rays. The background is a green wall with horizontal lines. Three purple text boxes are overlaid on the image.

Largest Contentful Paint

Cumulative Layout Shift

First Input Delay

What does performant actually
mean for ***your site***?

Example — Social Media Website 

Is it **happening**?

Time to First Byte

First Paint

First Contentful Paint 

Is it **useful**?

Largest Contentful Paint ✓

Visually Complete

Speed Index ✓

Is it **usable**?

First Input Delay & Max Potential First Input Delay

Total Blocking Time ✓

Time to Interactive

Is it **delightful**?

Cumulative Layout Shift ✓
Frame Rate



Speed Index

First Contentful Paint

Total Blocking Time

Largest Contentful Paint

Cumulative Layout Shift

How do I ***implement*** performance metrics?

✓ Choose the **metrics**

🤔 Define a **budget**

🤔 Start **measuring**

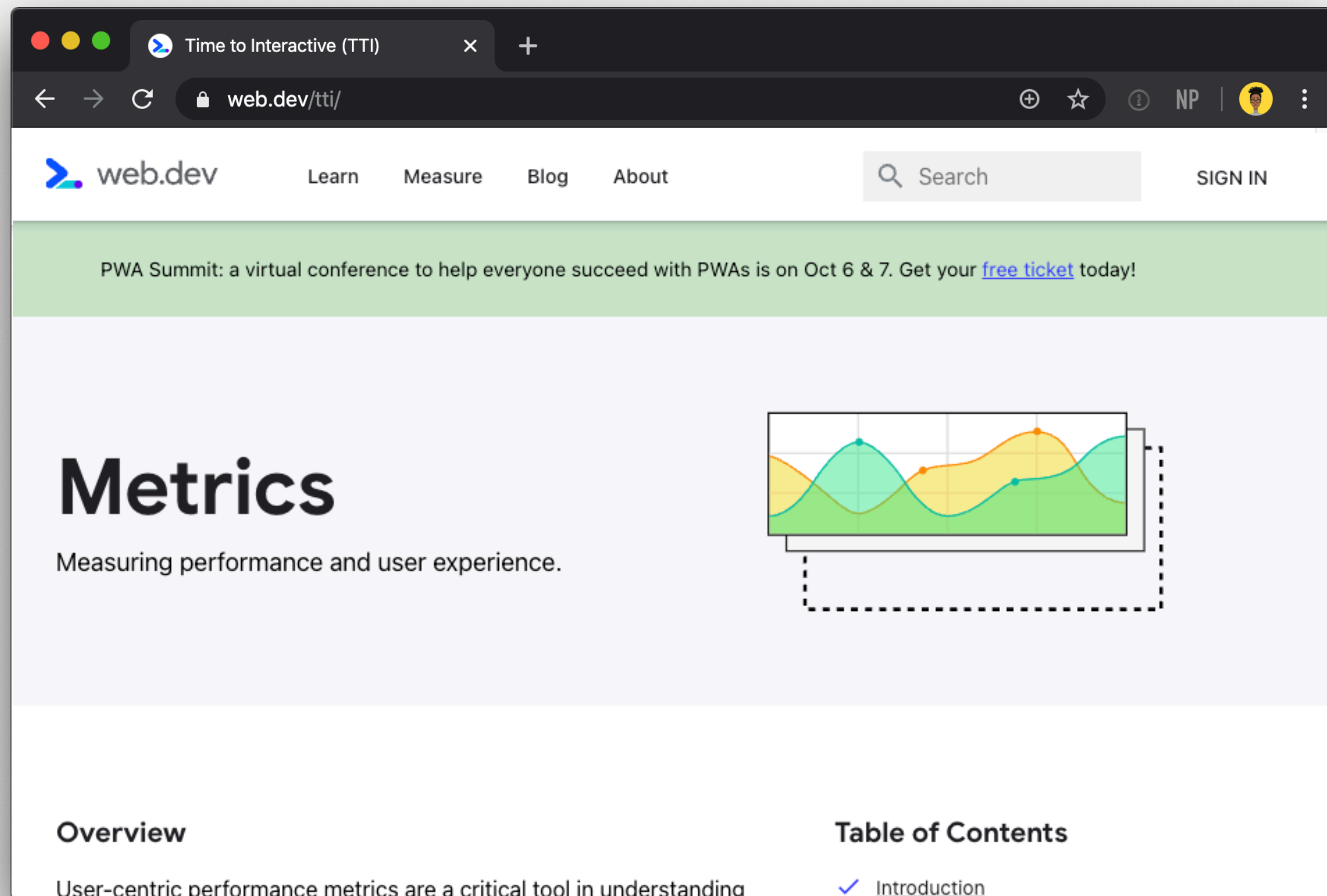
A **performance budget** defines specific values to your metrics that your site should never exceed

Example — Social Media Website

- FCP should not exceed **1.5 seconds**
- LCP should not exceed **2 seconds**
- SI should not exceed **0.43**
- TBT should not exceed **300 milliseconds**
- CLS should not exceed **0.1**

```
[{  
  "path": "/*",  
  "timings": [  
    { "metric": "first-contentful-paint", "budget": 1500 },  
    { "metric": "largest-contentful-paint", "budget": 2000 },  
    { "metric": "speed-index", "budget": 0.43 },  
    { "metric": "total-block-time", "budget": 300 },  
    { "metric": "cumulative-layout-shift", "budget": 0.1 }  
  ],  
}]
```

How do I define a budget?



https://web.dev/metrics/

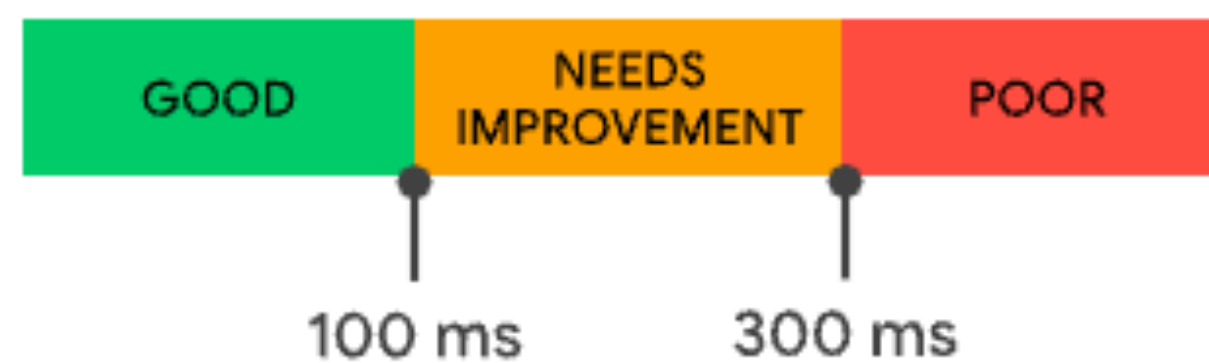
LCP

Largest Contentful Paint



FID

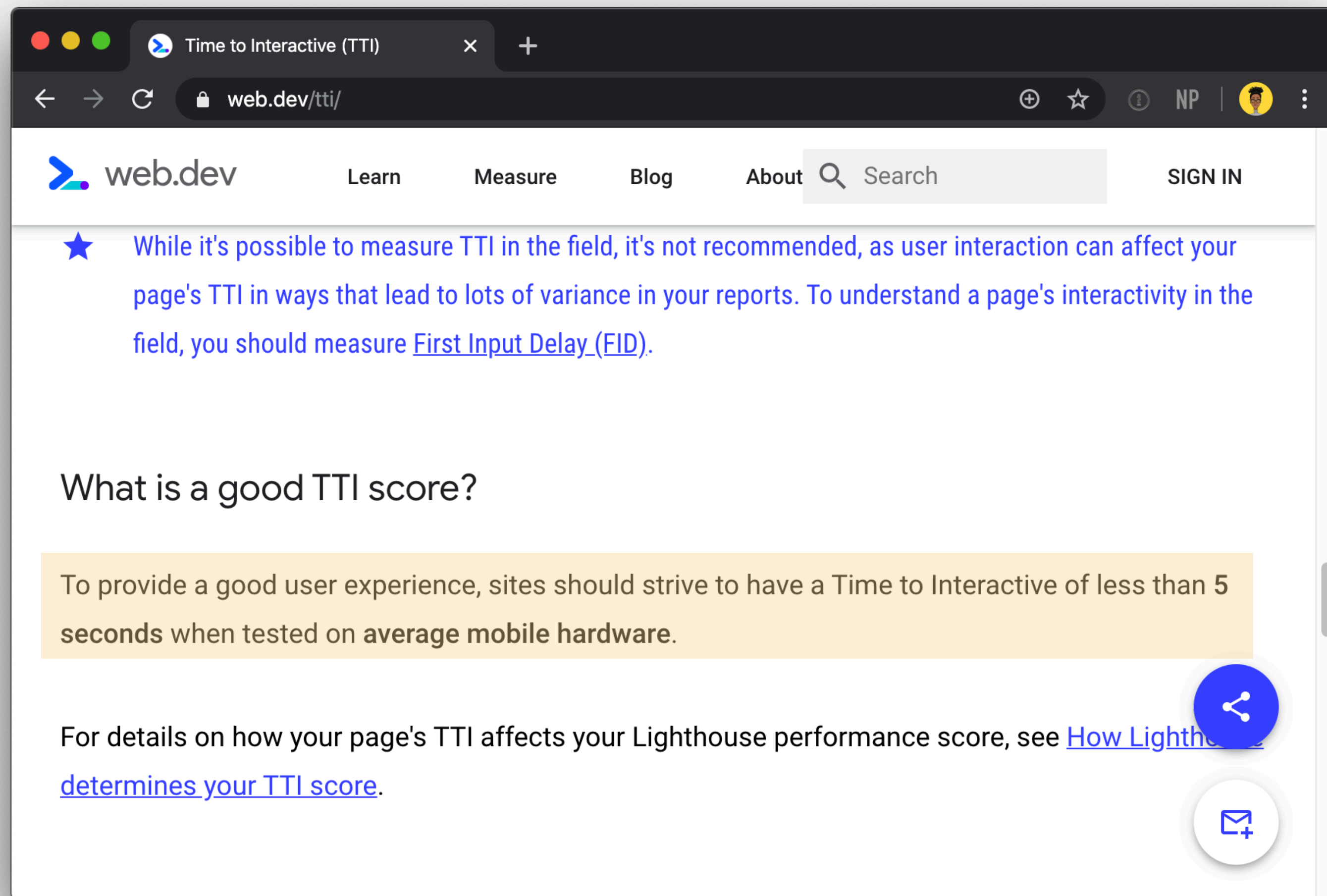
First Input Delay



CLS

Cumulative Layout Shift





Use your **competitors** as a
baseline/guide

i don't have to outrun the bear



i just have to outrun you !!

✓ Choose the **metrics**

✓ Define a **budget**

🤔 Start **measuring**

✓ Choose the **metrics**

✓ Define a **budget**

🤔 Start **measuring**



Lab Measuring vs **Field** Measuring

Measuring in the *lab*

Using tools to simulate a page load in a consistent and controlled environment

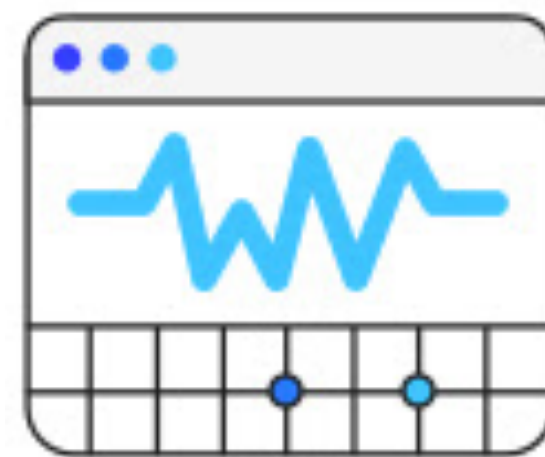
Measuring in the *field*

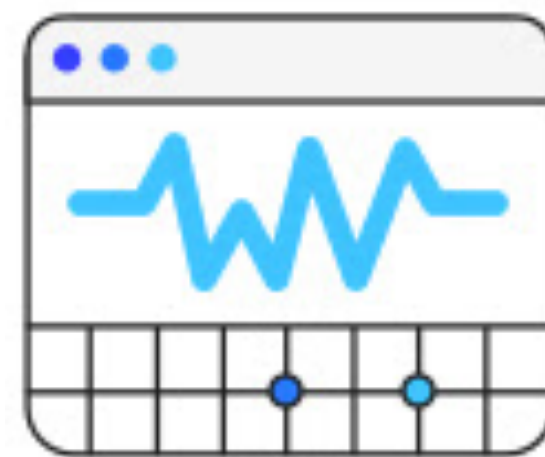
Getting information from when
real users engage with the page

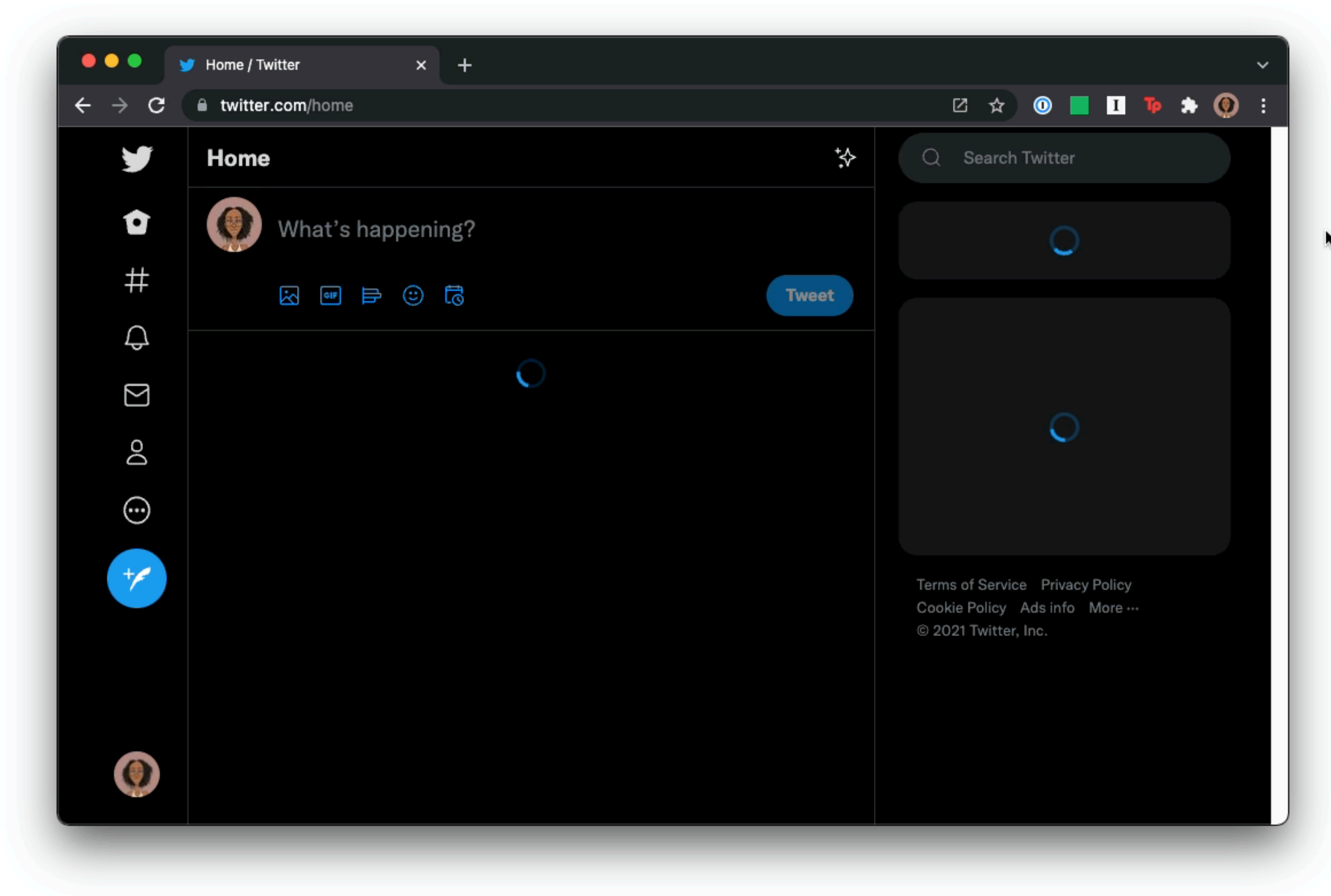
	Is it happening?			Is it useful?			Is it usable?				Is it delightful?	
	TTFB	FP	FCP	LCP	SI	VC	FID	mFID	TBT	TTI	CLS	FR
Lab	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
Field	✓	✓	✓	✓	✗	✗	✓	✗	✗	✗	✓	🌟

	Is it happening?			Is it useful?			Is it usable?				Is it delightful?	
	TTFB	FP	FCP	LCP	SI	VC	FID	mFID	TBT	TTI	CLS	FR
Lab	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
Field	✓	✓	✓	✓	✗	✗	✓	✗	✗	✗	✓	✨

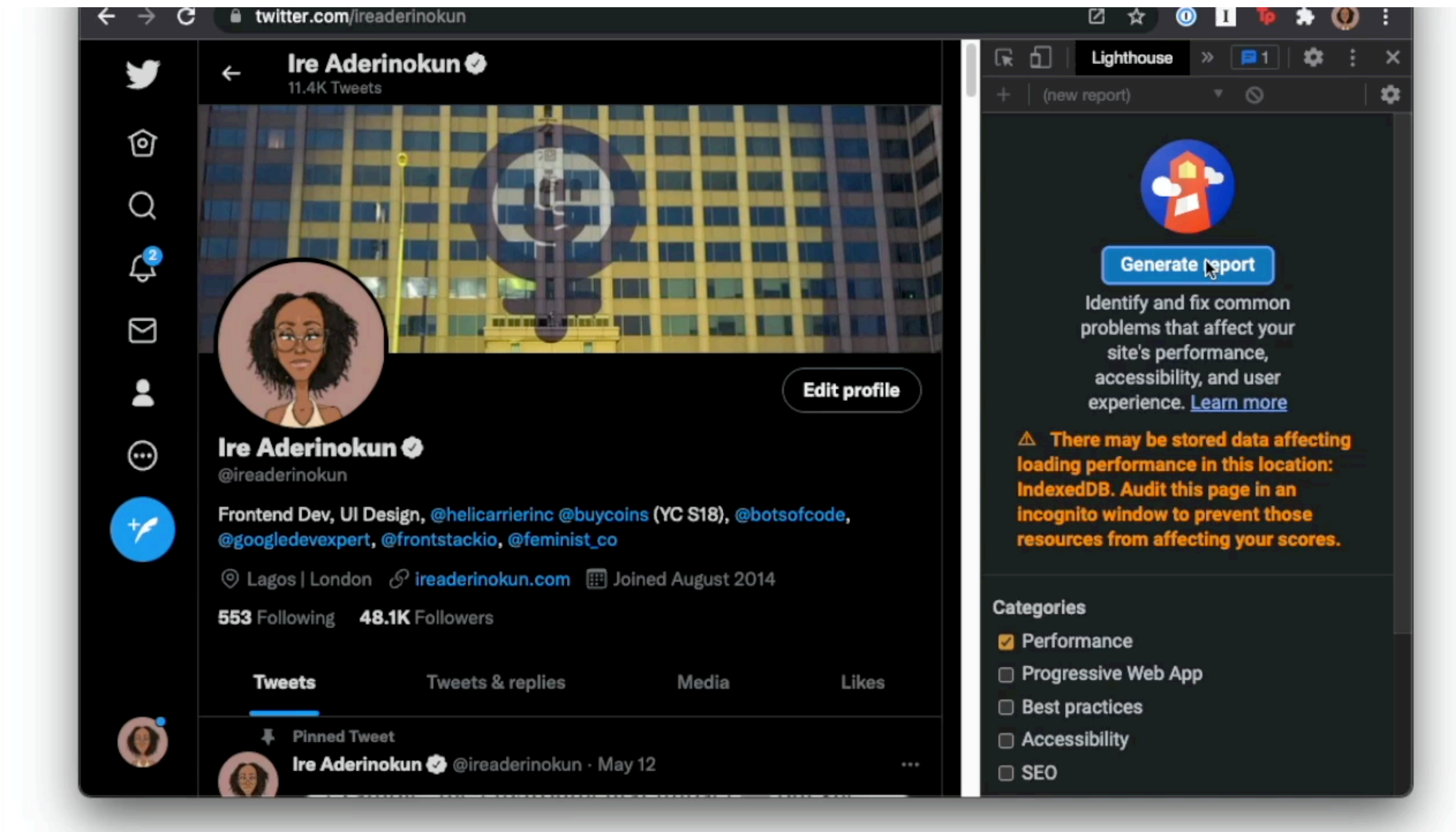
	Is it happening?			Is it useful?			Is it usable?				Is it delightful?	
	TTFB	FP	FCP	LCP	SI	VC	FID	mFID	TBT	TTI	CLS	FR
Lab	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
Field	✓	✓	✓	✓	✗	✗	✓	✗	✗	✗	✓	🌟



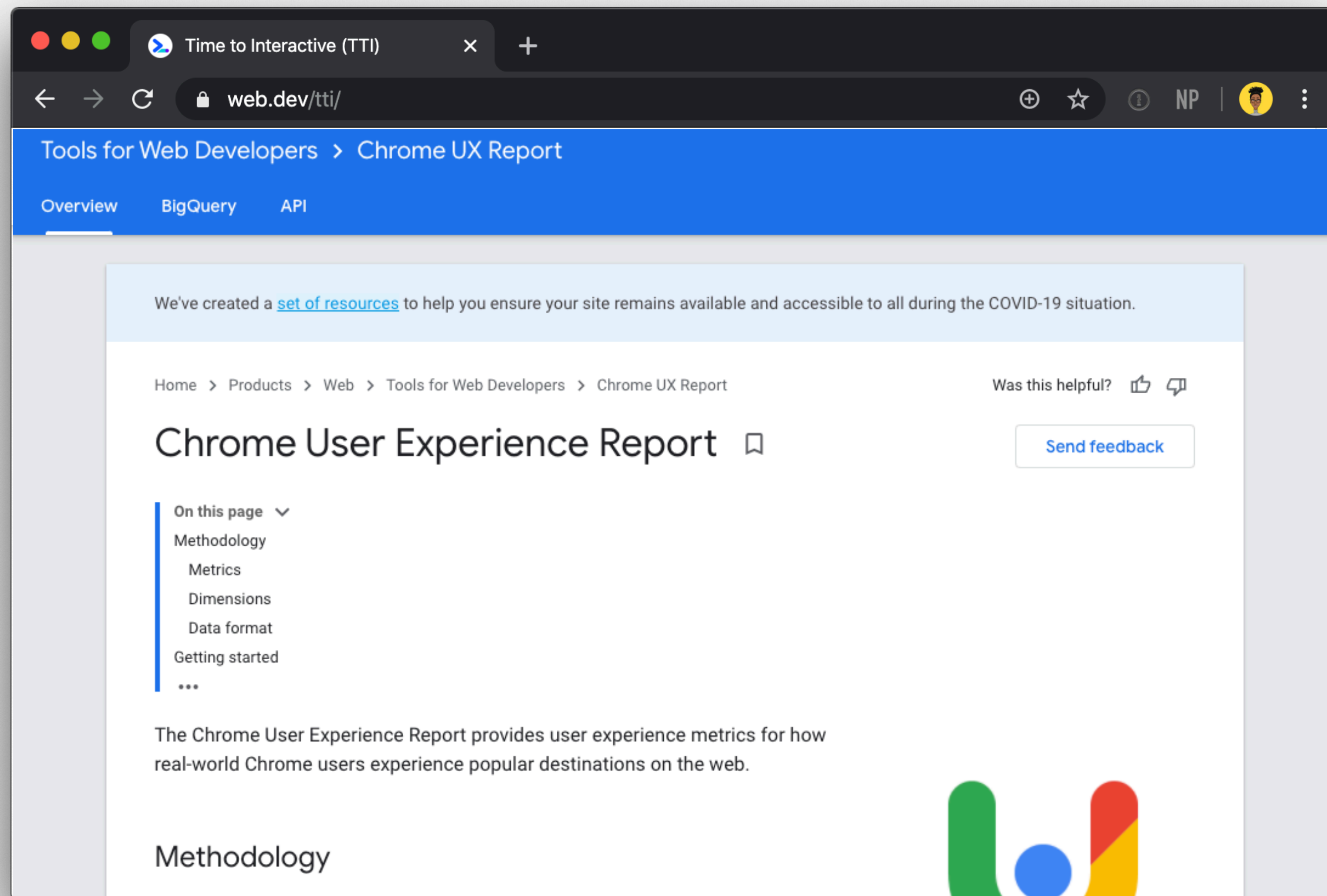




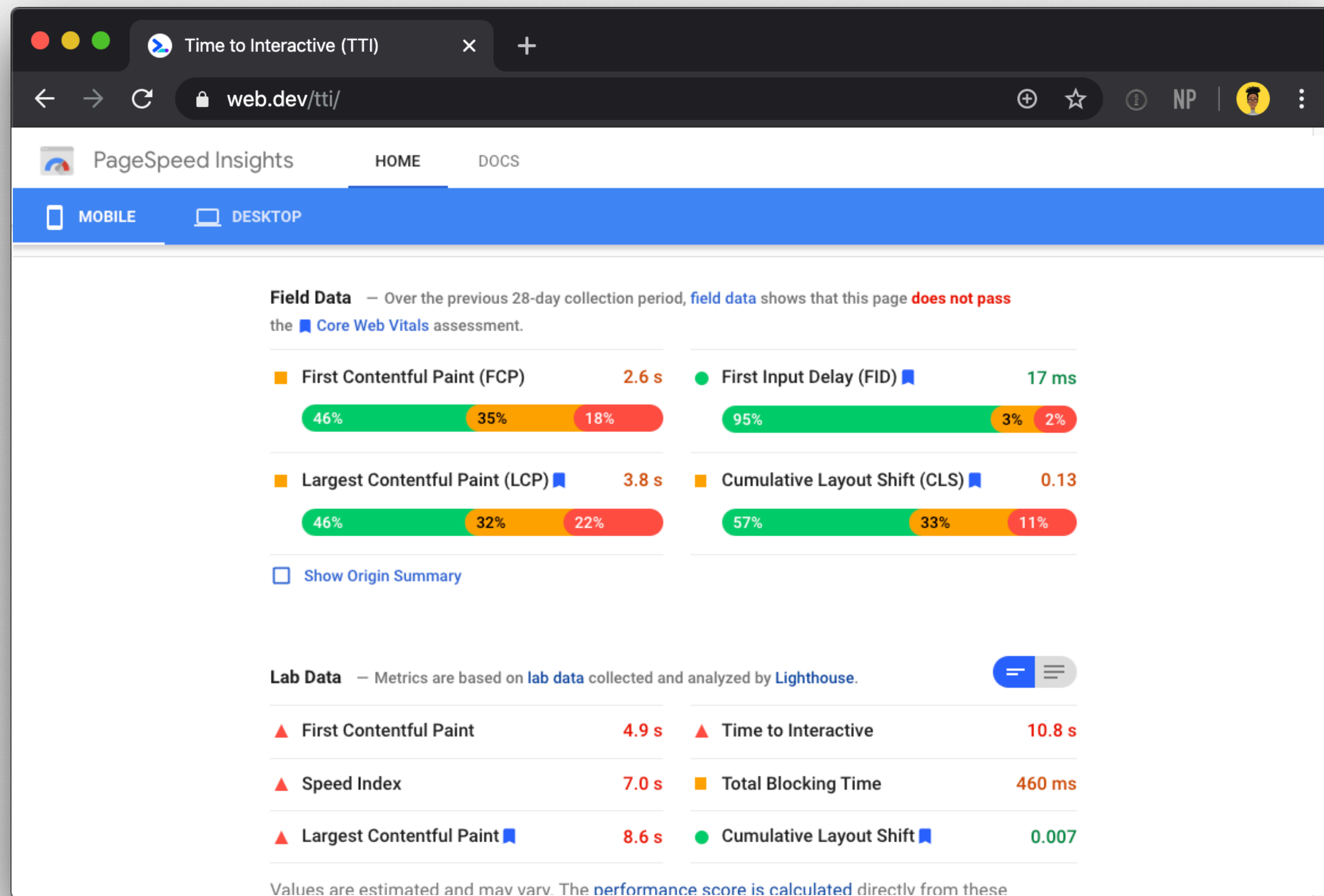
<https://github.com/GoogleChrome/web-vitals-extension>



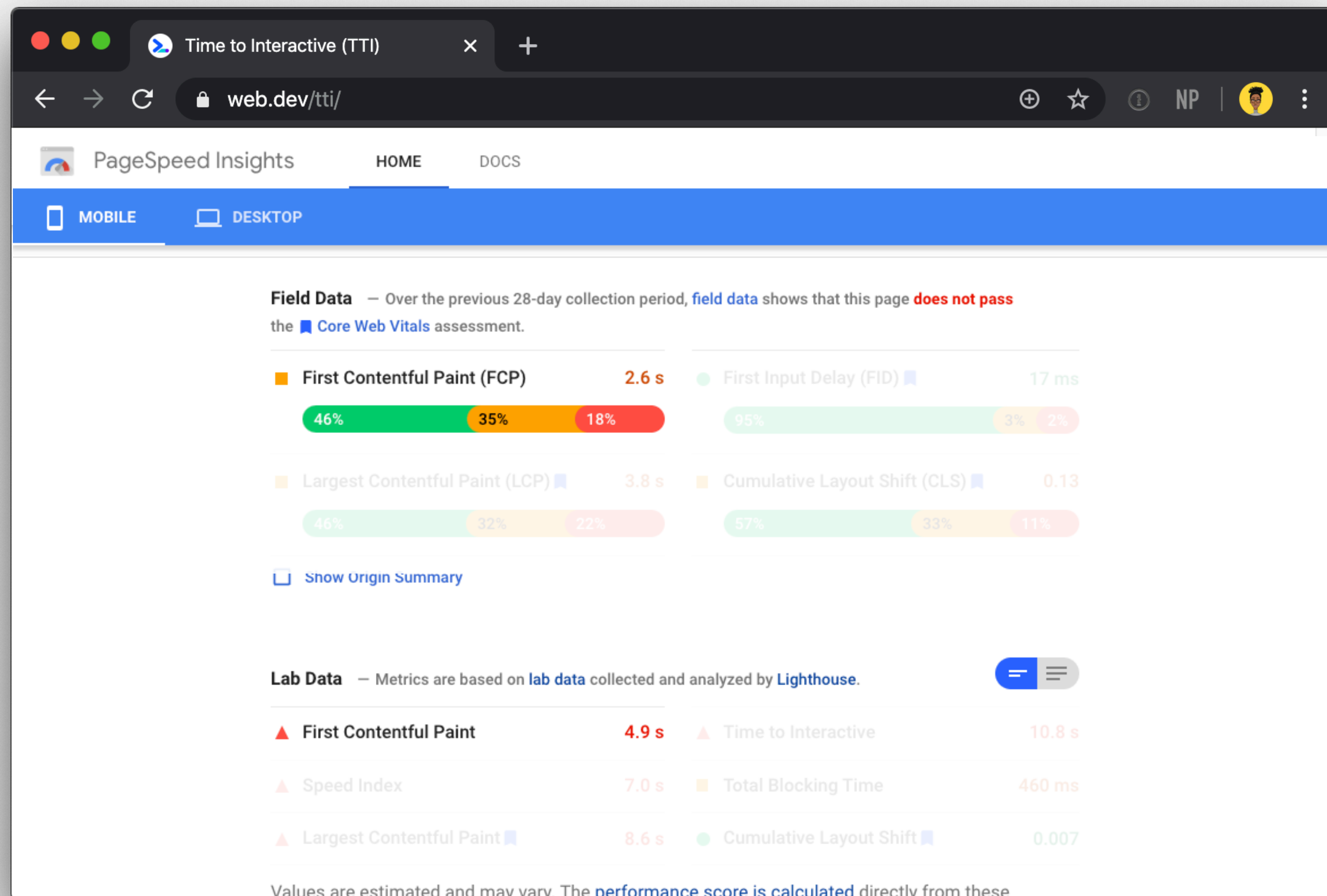
<https://github.com/GoogleChrome/lighthouse>



<https://developers.google.com/web/tools/chrome-user-experience-report/>



<https://developers.google.com/speed/pagespeed/insights>



<https://developers.google.com/speed/pagespeed/insights>

- ✓ Choose the **metrics**
- ✓ Define a **budget**
- ✓ Start **measuring**

WHAT IF I TOLD YOU

THIS WAS ONLY THE BEGINNING

Thank you!

ireaderinokun.com

bitsofco.de

[@ireaderinokun](https://www.instagram.com/ireaderinokun)

