Priority Hints

What your browser doesn't know (yet)

David Ross
10/26/2022

https://www.youtube.com/watch?v=XblbNmVxKBM

Agenda

- **Priority Hints**
  - Why do we want them?
  - What are they & how do they help?
  - How quickly are they adopted?
- **Origin trials**
  - How do you use them?
  - What happens after?
- **Testing perf wins builds enthusiasm in product teams**

About the Speaker

- 1 year Sr. Web Performance Engineer @ Etsy
  - Previously RealSelf
- 4 years in Web Perf
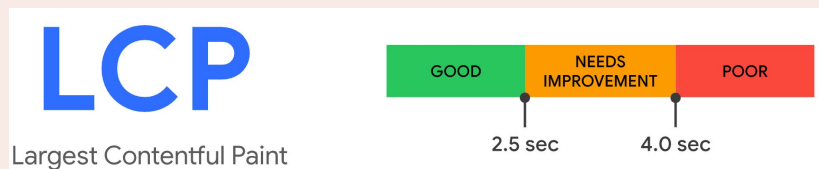 - PerfMatters Conference, Google SEO change
- Seattle, PNW

@CDaveRoss, linkedin.com/in/davidthakerross

Why Priority Hints

2300 ms LCP @ p75

LCP
Largest Contentful Paint

GOOD	NEEDS IMPROVEMENT	POOR

2.5 sec   4.0 sec

wait	dns	connect	ssl	html	js	css	image	flash	font	video	other

	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
1.				1654 ms						
2.				705 ms						
3.				715 ms						
4.					412 ms					
5.						808 ms				
6.							1507 ms			
7.										2792 ms
8.										2515 ms
9.										2605 ms
10.										2682 ms

*3G (1600/768 Kbps, 150ms Latency), Moto G4

Why not preload?

- Separately maintained in source
- Brittle (fall out of sync)
- Wasted downloads
- Still vulnerable to deprioritization
- Complicated for responsive images
- Complicated if using modern image formats

Priority Hints in Action

Auto/Baseline

1

https://web.dev/priority-hints/

```
<img src="/images/example.jpg" fetchpriority="high" alt="" />

<iframe src="https://example.com" fetchpriority="low" width="300" height="300"></iframe>

fetch("/api/endpoint.json", { priority: "low" }).then()
```

	Load in layout-blocking phase		Load one-at-a-time		
DevTools Priority	**Highest, Render Blocking**	**High**	**Medium**	**Low**	**Lowest**
Main Resource	◎				
Image, Media				◎	
Image (in viewport - after layout)		◎			
CSS (before image requests)	◎				
CSS (after image requests)			◎		
Script (before image requests)		◎			
Script (after image requests)			◎		
Script (async/defer)				◎	

Priority Hints in Action

High

2

https://web.dev/priority-hints/

```html
<img src="/images/example.jpg" fetchpriority="high" alt="" />

<iframe src="https://example.com" fetchpriority="low" width="300" height="300"></iframe>

fetch("/api/endpoint.json", { priority: "low" }).then()
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DevTools Priority	Load in layout-blocking phase		Load one-at-a-time		
	Highest, Render Blocking	High	Medium	Low	Lowest
Main Resource	◯				
Image, Media		● ←		◯	
Image (in viewport - after layout)		●◯			
CSS (before image requests)	●◯				
CSS (after image requests)		● ←	◯		
Script (before image requests)		●◯			
Script (after image requests)		● ←	◯		
Script (async/defer)		● ←		◯	

Priority Hints in Action

Low

3

https://web.dev/priority-hints/

```
<img src="/images/example.jpg" fetchpriority="high" alt="" />

<iframe src="https://example.com" fetchpriority="low" width="300" height="300"></iframe>

fetch("/api/endpoint.json", { priority: "low" }).then()
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	Load in layout-blocking phase		Load one-at-a-time		
DevTools Priority	**Highest, Render Blocking**	**High**	**Medium**	**Low**	**Lowest**
Main Resource	◎				
Image, Media				◎●	
Image (in viewport - after layout)		◎ →		●	
CSS (before image requests)	◎ →	●			
CSS (after image requests)			◎ →	●	
Script (before image requests)		◎ →		●	
Script (after image requests)			◎ →	●	
Script (async/defer)				◎●	

Priority Hints in Action

Combined

4

https://web.dev/priority-hints/

```html
<img src="/images/example.jpg" fetchpriority="high" alt="" />

<iframe src="https://example.com" fetchpriority="low" width="300" height="300"></iframe>

fetch("/api/endpoint.json", { priority: "low" }).then()
```

DevTools Priority	Load in layout-blocking phase		Load one-at-a-time		
	Highest, Render Blocking	High	Medium	Low	Lowest
Main Resource	⭕				
Image, Media		⬆️		⭕⬇️	
Image (in viewport - after layout)		⬆️⭕		⬇️	
CSS (before image requests)	⬆️⭕	⬇️			
CSS (after image requests)		⬆️	⭕	⬇️	
Script (before image requests)		⬆️⭕		⬇️	
Script (after image requests)		⬆️	⭕	⬇️	
Script (async/defer)		⬆️		⭕⬇️	

⭕: fetchpriority="auto"
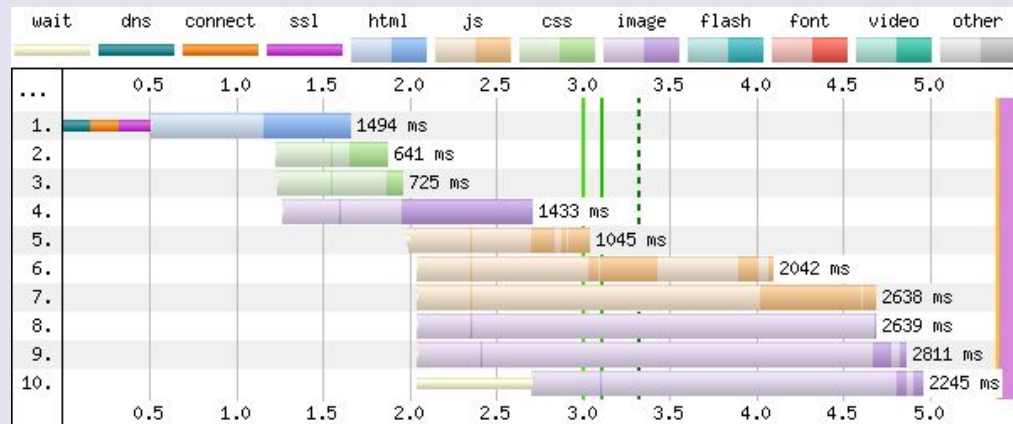⬆️: fetchpriority="high"
⬇️: fetchpriority="low"

Initial Results

-83 ms LCP
@ p75

4% improvement

1-2 months of gains

1 new template attribute
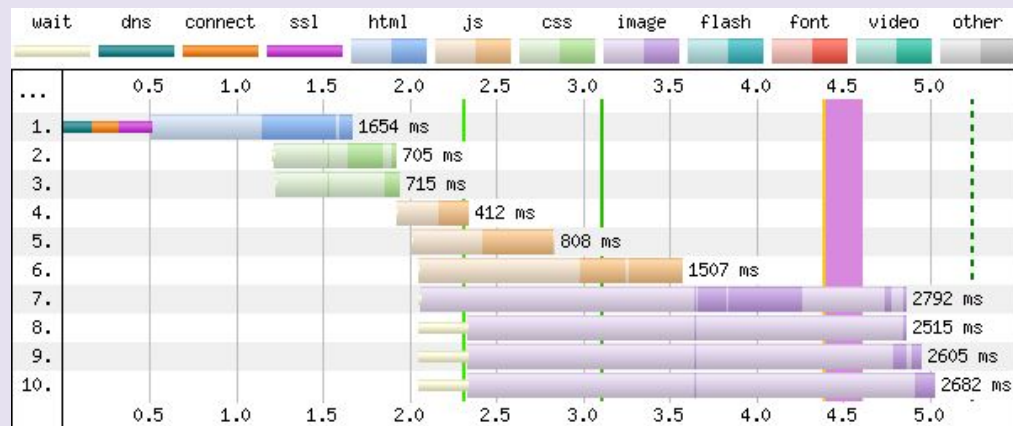
*3G (1600/768 Kbps, 150ms Latency), Moto G4

Uptake

1.57%
% pageloads
(in Chrome)

Oct. 2022

0.03%
Sites applied
to LCP

4%
Top-1000 sites
Top-10k sites

" Priority Hints is like a "cheat code" for improving LCP by helping the image load sooner.

That so few sites are using it demonstrates one of the biggest (and easiest) performance opportunities before us."

Rick Viscomi,
quoting Pat Meenan
Staff DevRel Engineer
Google

The story's not over

Origin Trials
or how I helped the HTML spec?

140.85

The story's not over...
Origin Trial?
What do you mean?

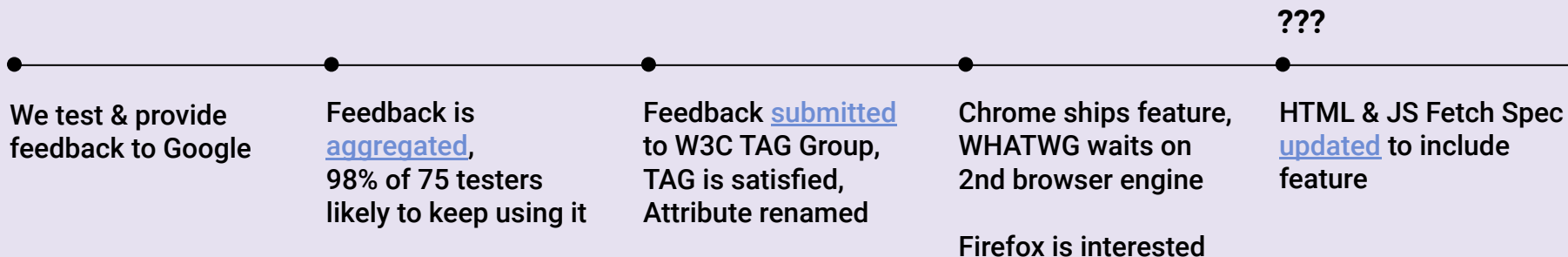# Origin Trial in Action

```
// <head> tag
<meta http-equiv="origin-trial" content="TOKEN_GOES_HERE">

// HTTP Header ***
Origin-Trial: TOKEN_GOES_HERE

// Programatically, in JS
const otMeta = document.createElement('meta');
otMeta.httpEquiv = 'origin-trial';
otMeta.content = 'TOKEN_GOES_HERE';
document.head.append(otMeta);
```

https://developer.chrome.com/en/docs/web-platform/origin-trials

Origin Trial Process

???

We test & provide
feedback to Google

Feedback is
aggregated,
98% of 75 testers
likely to keep using it

Feedback submitted
to W3C TAG Group,
TAG is satisfied,
Attribute renamed

Chrome ships feature,
WHATWG waits on
2nd browser engine

Firefox is interested

HTML & JS Fetch Spec
updated to include
feature

Product Enthusiasm for Perf

Search listing cards

Mobile web market

Item category

Thank You