

Rendimiento Web

Intro y Herramientas

Kevin Chavez · JSConf MX 2024

Kevin Chavez

- Web Speed en Facebook
- Tech Lead en un startup haciendo un motor de videojuegos en WebGL+React
- Consultoría, incluyendo rendimiento
- Fig 1: yo buscando la siguiente optimización



Acción => Efecto



Todo código tarda tiempo en ejecutarse

Todos los datos tarda tiempo en accederse

Todo código, todo dato, y toda acción es rendimiento

30 min 🤔

1. ¿Por qué?

Calidad. Utilidad > Métricas.

Vodafone: Una mejora del 31% en el LCP **umentó las ventas en un 8%**

Cómo The Economic Times pasó los umbrales de las Métricas web esenciales y logró un **porcentaje de rebote un 43% más alto en general**

Cómo redBus mejoró la métrica Interaction to Next Paint (INP) de su sitio web y **umentó sus ventas un 7%**

Carpe improved Largest Contentful Paint by 52% and Cumulative Layout Shift by 41% and saw a **10% increase in traffic**, a 5% increase in online store conversion rate, and a **15% increase in revenue**.

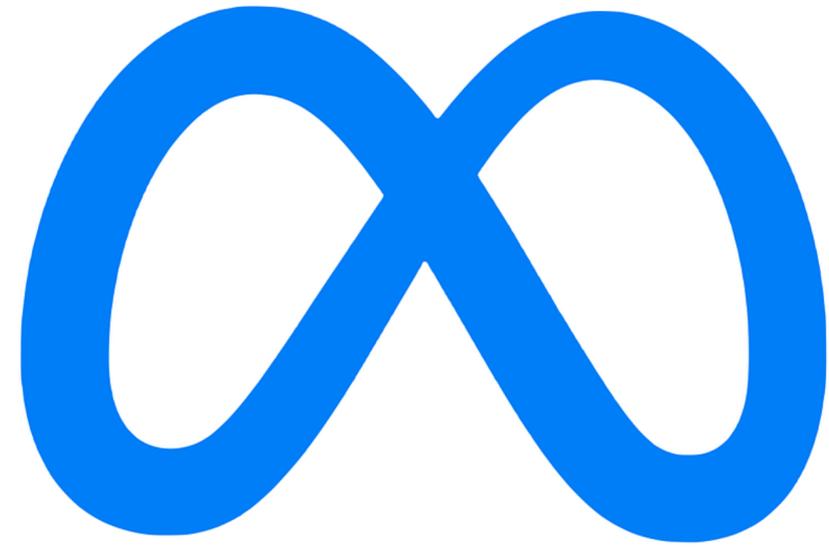
Adobe improved from 7.2 seconds to 3.4 seconds and **engaged visit rate increased by 35%**, bounce rates decreased by 6%, and the **average time spent on page increased by 21%** for mobile visitors.

Ingram Micro focused on reducing Total Blocking Time and saw a **35% increase in organic traffic** by improving their homepage TBT by 40%.

NDTV, one of India's leading news stations and websites, improved LCP by 55% and saw a **50% reduction in bounce rate**.

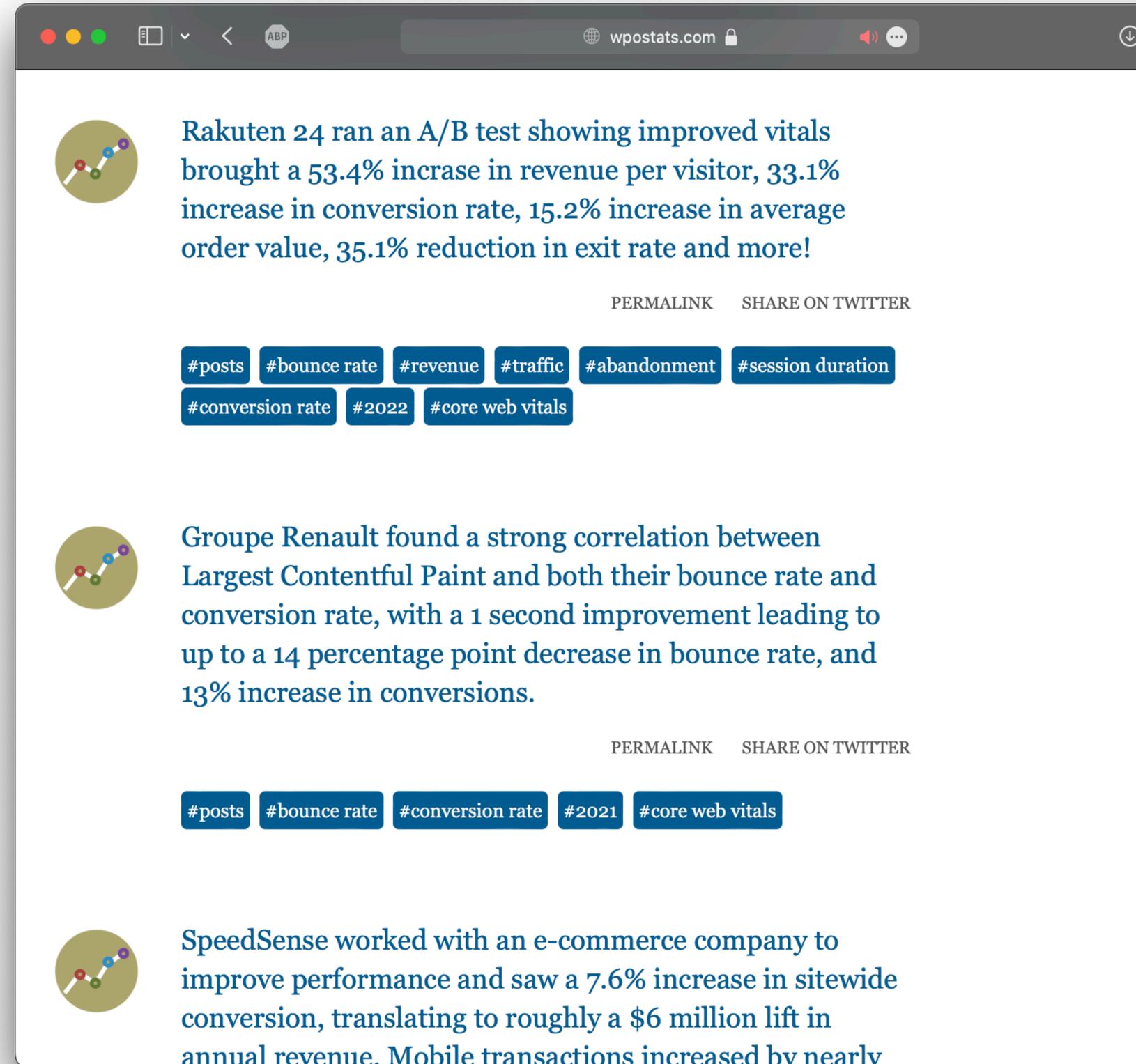
Cómo la inversión de Rakuten 24 en Métricas web esenciales **umentó los ingresos por visitante en un 53.37%** y el porcentaje de **conversiones en un 33.13%**

QuintoAndar reduced LCP by 26% and FID by 72% and saw a **46% reduction in bounce rate**, and **87% increase in pages per session**, and a **5% improvement in conversion**.



WPO stats

<https://wpostats.com/>



The screenshot shows a browser window with the URL wpostats.com. The page features three articles, each with a circular icon containing a line graph with four data points. The first article is about Rakuten 24, the second about Groupe Renault, and the third about SpeedSense. Each article includes a title, a short description, and a list of relevant hashtags.

Rakuten 24 ran an A/B test showing improved vitals brought a 53.4% increase in revenue per visitor, 33.1% increase in conversion rate, 15.2% increase in average order value, 35.1% reduction in exit rate and more!

PERMALINK SHARE ON TWITTER

#posts #bounce rate #revenue #traffic #abandonment #session duration
#conversion rate #2022 #core web vitals

Groupe Renault found a strong correlation between Largest Contentful Paint and both their bounce rate and conversion rate, with a 1 second improvement leading to up to a 14 percentage point decrease in bounce rate, and 13% increase in conversions.

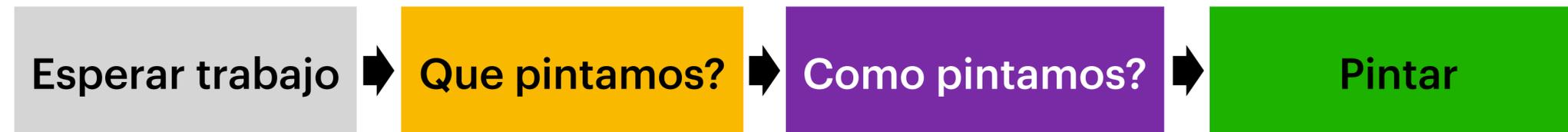
PERMALINK SHARE ON TWITTER

#posts #bounce rate #conversion rate #2021 #core web vitals

SpeedSense worked with an e-commerce company to improve performance and saw a 7.6% increase in sitewide conversion, translating to roughly a \$6 million lift in annual revenue. Mobile transactions increased by nearly

Como pintar?

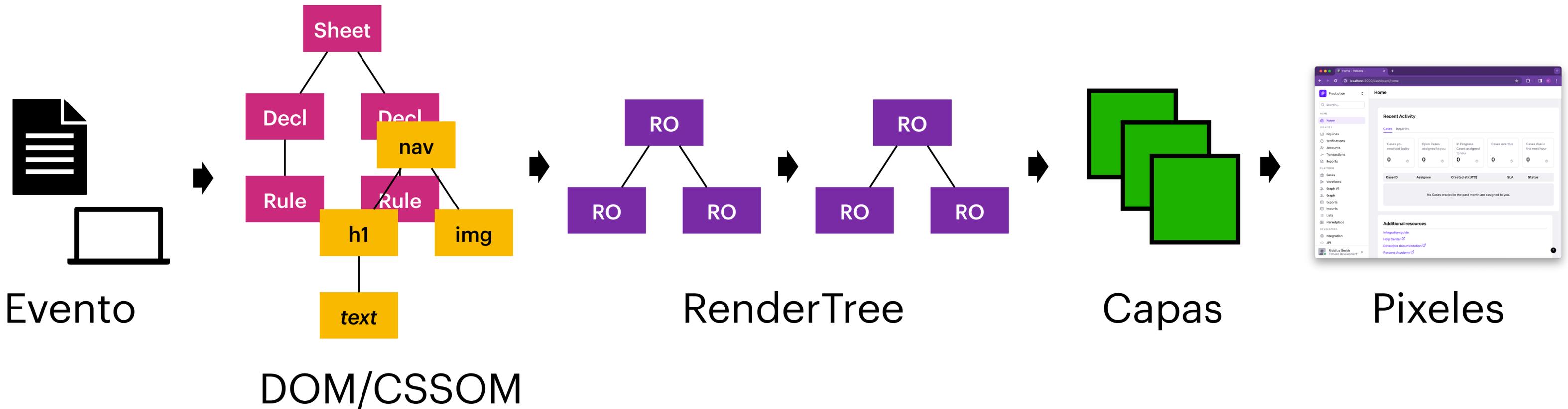
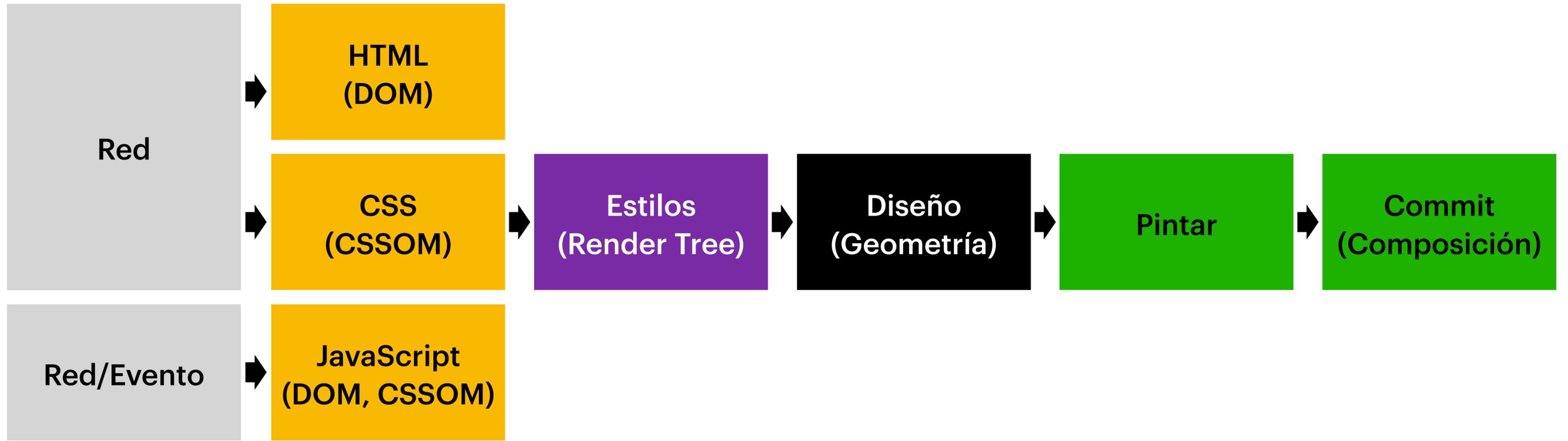
Version General

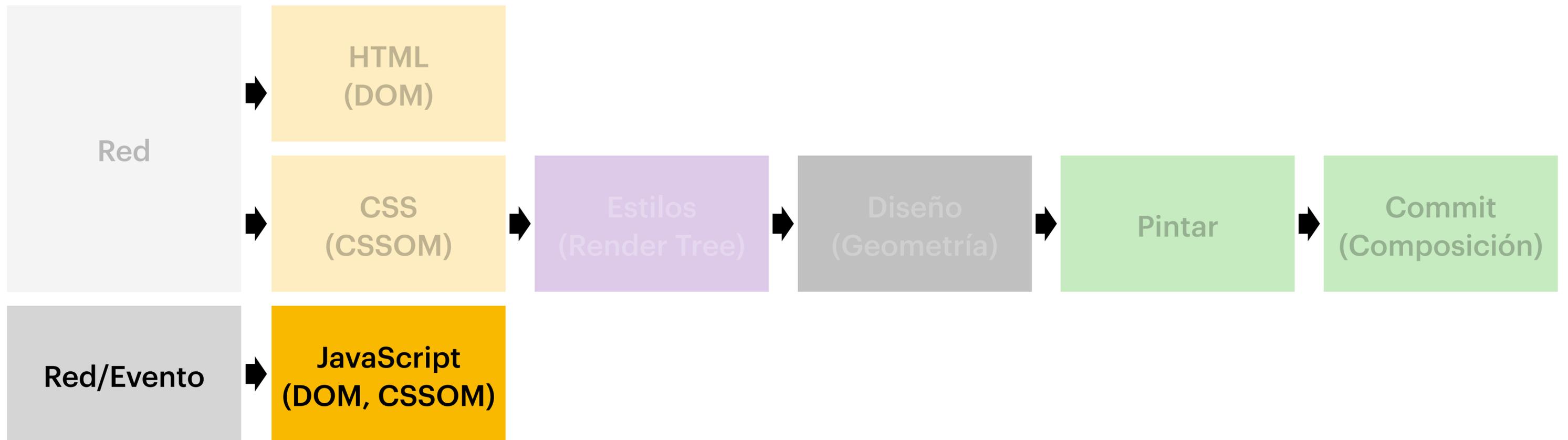


Como pintar?

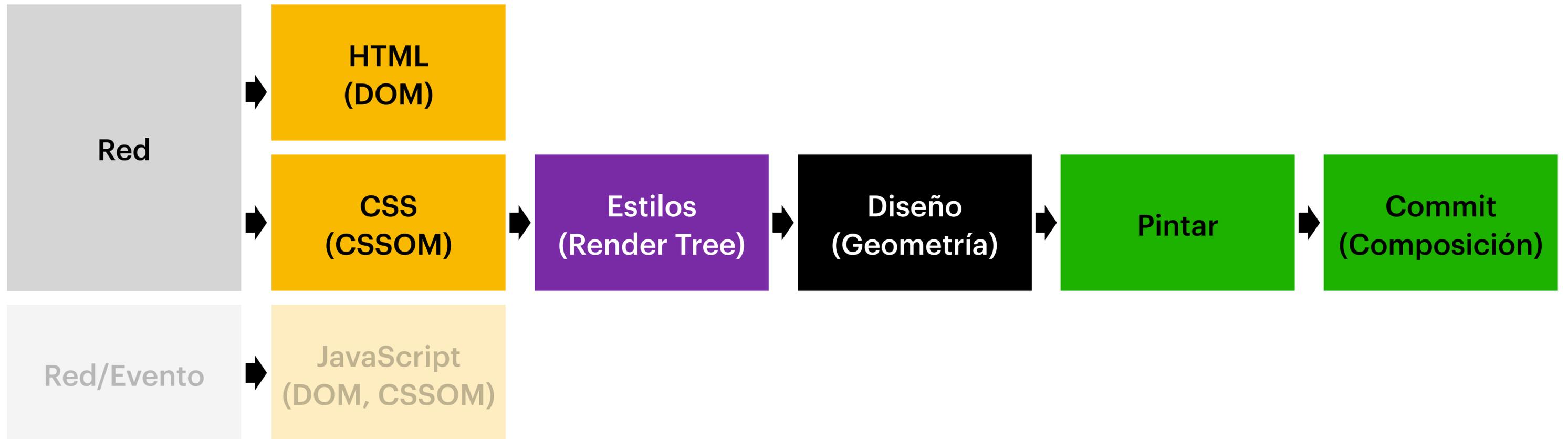
Version navegador



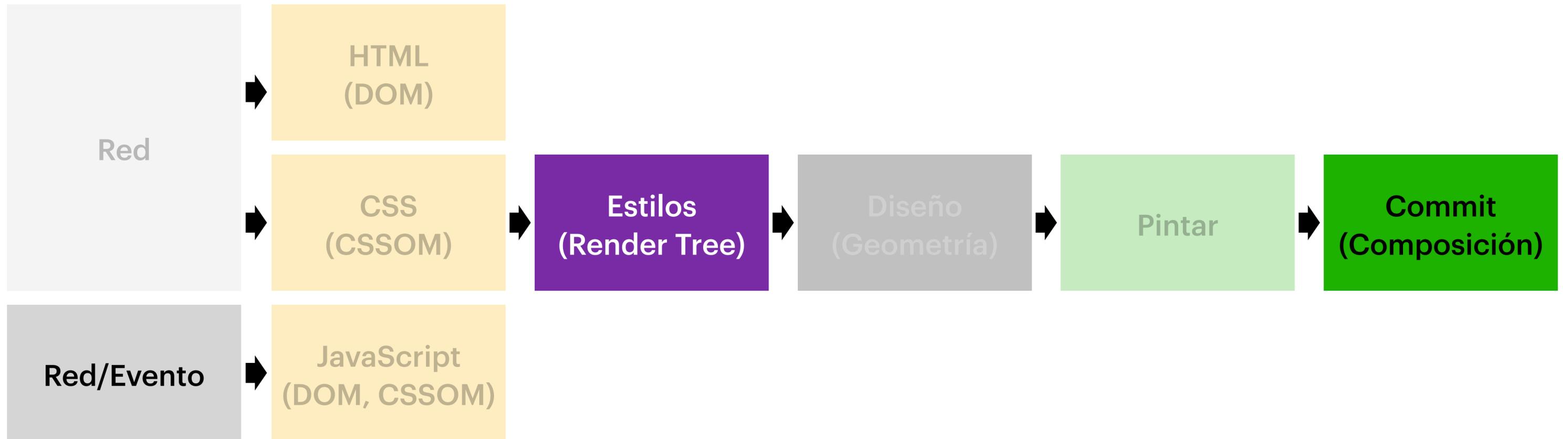




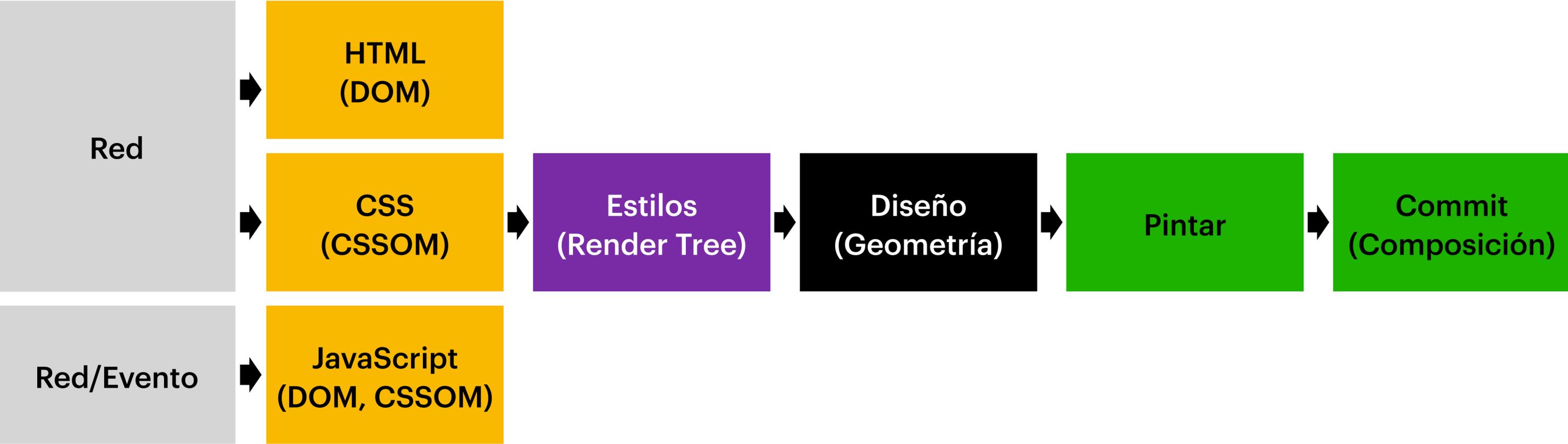
Un usuario presiona una tecla,
pero nada cambia en el DOM/CSSOM



Cargamos una página sin JS



Un usuario se desplaza en una página de HTML simple y sin JS

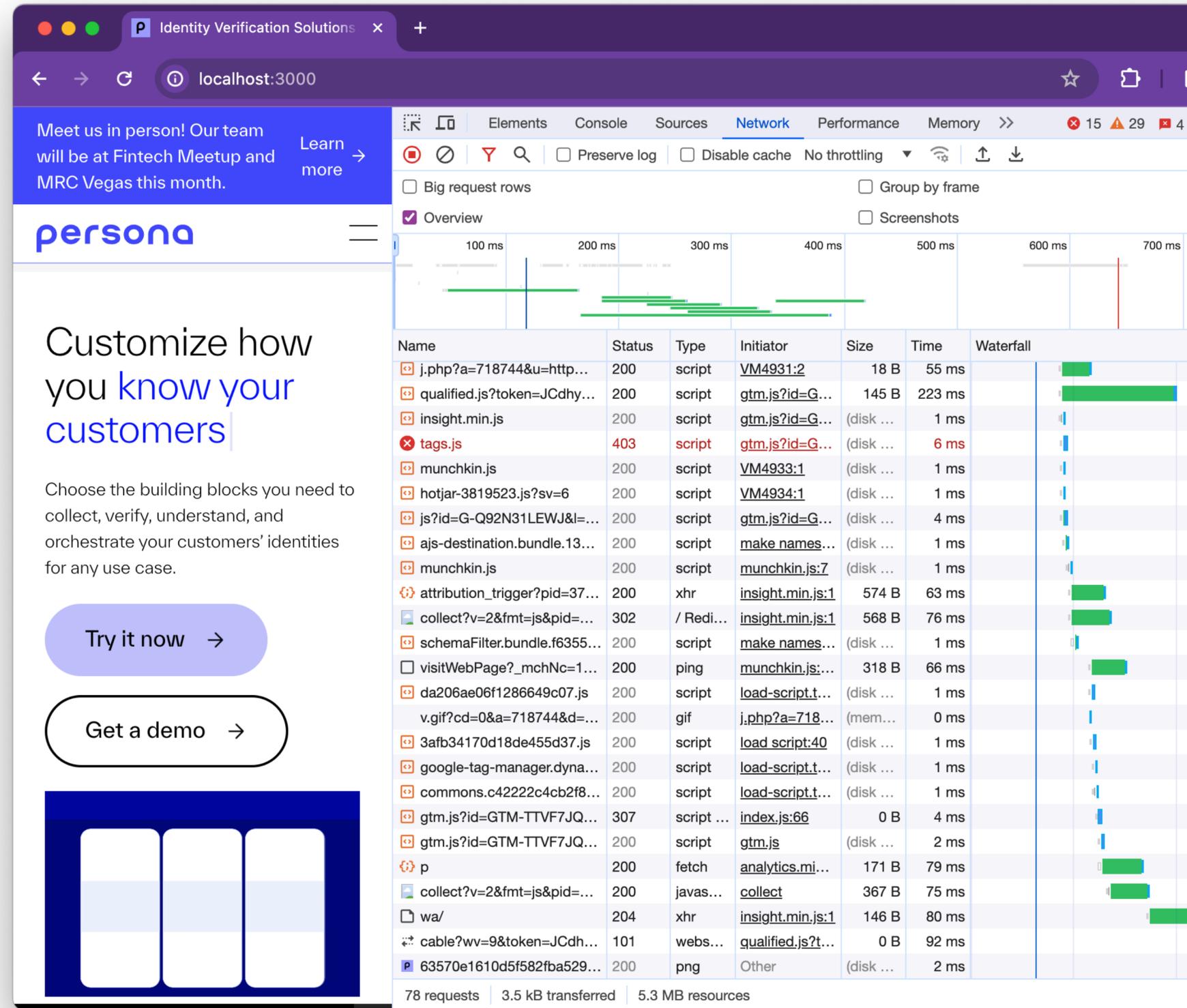




Network Tab

Información sobre las solicitudes de red

- ¿Cuándo ocurrió un request?
- ¿Qué lo inició?
- ¿Por qué se detuvo/falló? ¿Red? ¿Servidor?
- Opciones útiles:
 - Desactivar caché
 - Limitación de velocidad
 - Link al código que inició un request



The screenshot shows a web browser window with the Network Tab open. The page content is for 'persona' and includes a navigation bar, a main heading 'Customize how you know your customers', and two buttons: 'Try it now' and 'Get a demo'. Below the buttons are three placeholder images. The Network Tab interface includes a search bar, a list of requests, and a waterfall chart. The list of requests is as follows:

Name	Status	Type	Initiator	Size	Time	Waterfall
j.php?a=718744&u=http...	200	script	VM4931:2	18 B	55 ms	
qualified.js?token=JCdh...	200	script	gtm.js?id=G...	145 B	223 ms	
insight.min.js	200	script	gtm.js?id=G...	(disk ...)	1 ms	
tags.js	403	script	gtm.js?id=G...	(disk ...)	6 ms	
munchkin.js	200	script	VM4933:1	(disk ...)	1 ms	
hotjar-3819523.js?sv=6	200	script	VM4934:1	(disk ...)	1 ms	
js?id=G-Q92N31LEWJ&l=...	200	script	gtm.js?id=G...	(disk ...)	4 ms	
ajs-destination.bundle.13...	200	script	make names...	(disk ...)	1 ms	
munchkin.js	200	script	munchkin.js:7	(disk ...)	1 ms	
attribution_trigger?pid=37...	200	xhr	insight.min.js:1	574 B	63 ms	
collect?v=2&fmt=js&pid=...	302	/ Redi...	insight.min.js:1	568 B	76 ms	
schemaFilter.bundle.f6355...	200	script	make names...	(disk ...)	1 ms	
visitWebPage?_mchNc=1...	200	ping	munchkin.js:...	318 B	66 ms	
da206ae06f1286649c07.js	200	script	load-script.t...	(disk ...)	1 ms	
v.gif?cd=0&a=718744&d=...	200	gif	j.php?a=718...	(mem...)	0 ms	
3afb34170d18de455d37.js	200	script	load script:40	(disk ...)	1 ms	
google-tag-manager.dyna...	200	script	load-script.t...	(disk ...)	1 ms	
commons.c42222c4cb2f8...	200	script	load-script.t...	(disk ...)	1 ms	
gtm.js?id=GTM-TTVF7JQ...	307	script ...	index.js:66	0 B	4 ms	
gtm.js?id=GTM-TTVF7JQ...	200	script	gtm.js	(disk ...)	2 ms	
p	200	fetch	analytics.mi...	171 B	79 ms	
collect?v=2&fmt=js&pid=...	200	javas...	collect	367 B	75 ms	
wa/	204	xhr	insight.min.js:1	146 B	80 ms	
cable?wv=9&token=JCdh...	101	webs...	qualified.js?t...	0 B	92 ms	
63570e1610d5f582fba529...	200	png	Other	(disk ...)	2 ms	

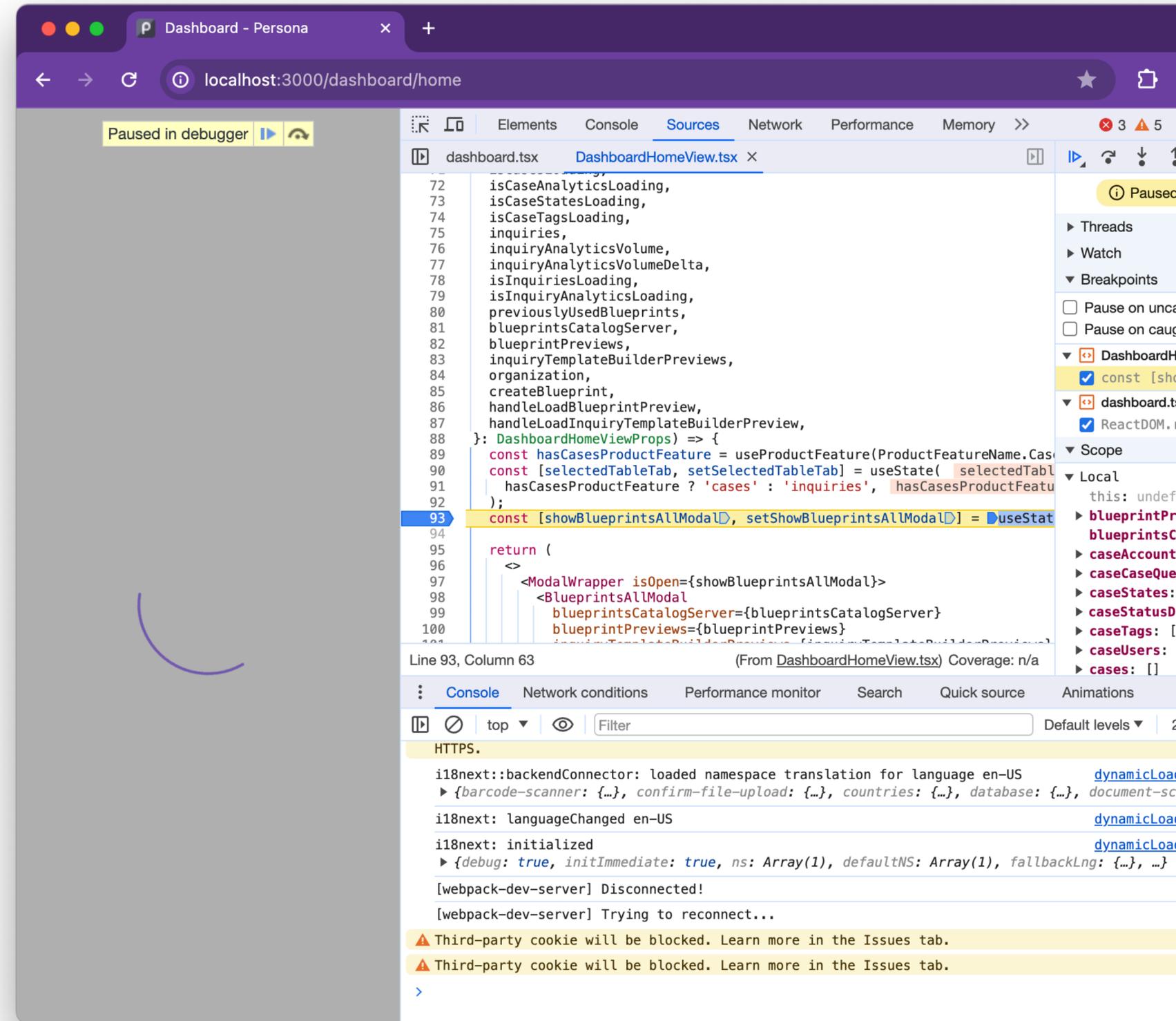
78 requests | 3.5 kB transferred | 5.3 MB resources



Sources Tab

Debugger de JavaScript

- Agregar puntos de interrupción. Al detenerse, ver:
 - Pila de llamadas
 - Variables en el ámbito
- Interrupción automática en excepciones
- Otras opciones para interrupciones:
 - Al cambiar un elemento DOM, al hacer una solicitud con una URL que contiene una cadena específica, en eventos DOM, etc.



Memory Tab

Uso de memoria de JavaScript

- 3 tipos de profiling:
 - Snapshot— ver qué está en la memoria y por qué
 - Allocation Timeline— grabar y ver qué se asignó y cuándo
 - Allocation Sampling— grabar y ver cuánta memoria asignó cada llamada de función
- También se puede activar la recolección de basura

The screenshot shows the Chrome DevTools Memory tab. The browser window displays a page for 'persona' with a navigation menu. The Memory tab is open, showing a summary of heap snapshots and allocation timelines. The 'Summary' view is selected, displaying a table of memory objects.

Constructor	Distance	Shallow Size
▶ Window ×103	1	40 632 0
▶ (compiled code) ×352052	3	21 252 884 39
▶ (closure) ×106548	2	3 279 680 6
▶ system / Context ×23496	3	745 072 1
▼ Object ×106142	2	3 079 836 6
▼ Object @729381	7	28 0
▶ dispatch :: v() @886007	8	32 0
▶ getState :: u() @886005	8	32 0
▶ map :: system / Map @1019199	8	40 0
▶ __proto__ :: Object @213809 []	2	28 0
▶ <symbol observable> :: f() @1648653	8	32 0
▶ replaceReducer :: d() @1648651	8	32 0
▶ subscribe :: h() @879439	8	32 0
▶ properties :: system / PropertyArray @1	8	20 0
▶ Object @118311	7	28 0
▶ Object @514357	7	28 0
▶ Object @451937	7	28 0
▶ Object @231777	7	28 0

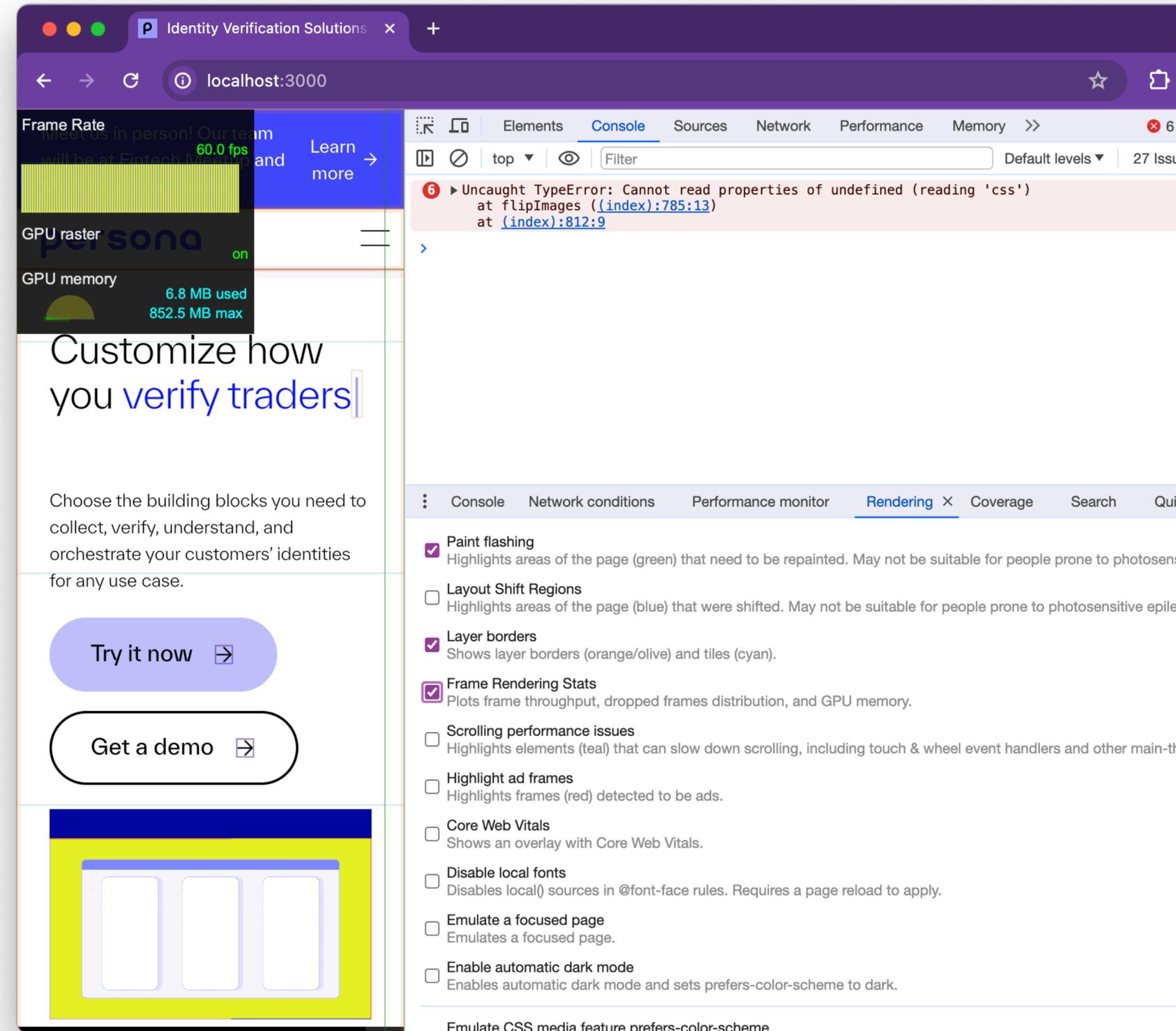
Object	Distance	Shallow Size
▼ store in Object @891437	6	28 0
▼ ix2 in Object @876121	5	28 0
▼ kr in system / Context @448693	4	92 0
▼ context in () @879961 []	3	32 0
▼ validClick in Object @452941 []	2	28 0
▶ Webflow in Window @7419 []	1	36 0
▶ value in system / PropertyCell @	3	20 0
ge in system / Context @448693	4	92 0
▶ ac in system / Context @898215	6	60 0
▶ exports in Object @459107	7	16 0
▶ qr in system / Context @1167899	8	36 0
▶ \$s in system / Context @1167717	8	20 0
▶ mr in system / Context @1167623	8	28 0
▶ gr in system / Context @1167407	8	24 0



Rendering Tab

Información sobre diseño, pintura y composición

- Habilita overlays útiles:
 - Destello de pintura: resalta los elementos cuando se repintan
 - Estado de renderizado de fotogramas: FPS, uso de memoria de la GPU
 - Bordos de capas
 - Regiones de cambio de diseño: resalta áreas donde el diseño (layout) ha cambiado





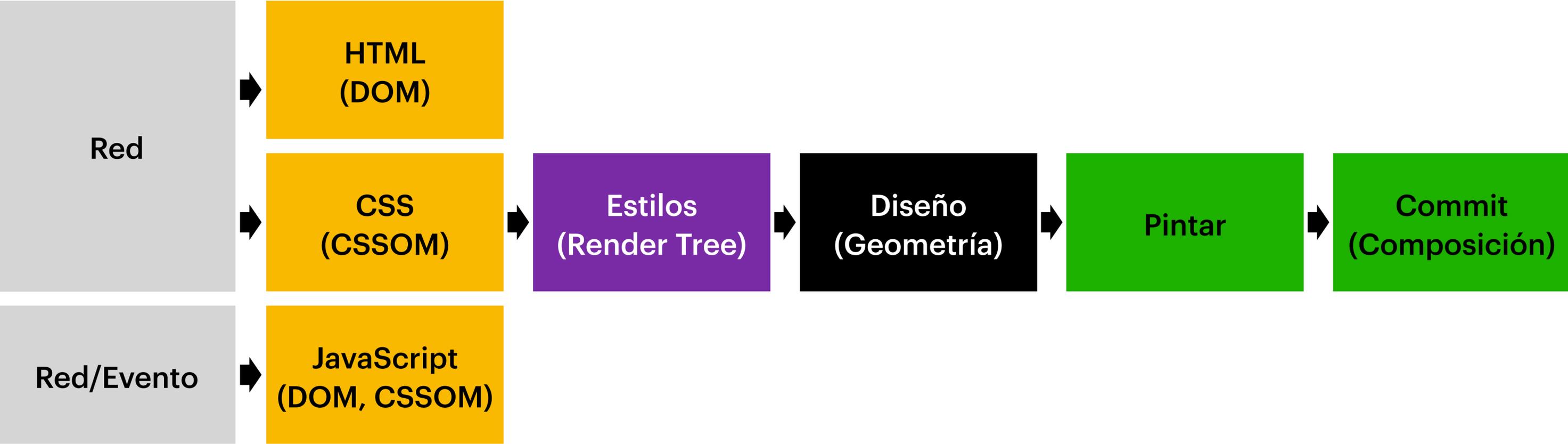
Layers Tab

Perspectivas sobre pintura/composición

- Muestra todas las capas, su tamaño y uso de memoria
- Muestra por qué es su propia capa
- Profiler de pintura: ¿cómo se pintó y cuánto tiempo tomó?

The screenshot shows a web browser at localhost:3000 displaying a page for 'Identity Verification Solutions'. The page has a blue header with the text 'Meet us in person! Our team will be at Fintech Meetup and MRC Vegas this month.' and a 'Learn more' link. Below the header is the 'persona' logo and a main content area with the text 'Customize how you tr|' and a call to action 'Try it now' button. The Layers Tab in Chrome DevTools is open, showing a tree of DOM elements. The selected element is an SVG with dimensions 16x17. The right panel shows details for this element, including its size, compositing reasons, memory estimate, and paint count.

Property	Value
Size	16 x 17 (at 0, 0)
Compositing Reasons	Leaf of a 3D scene, for flattening its descendants in
Memory estimate	1.1 kB
Paint count	1
Slow scroll regions	
Sticky position constraint	



Performance Tab

Información sobre todo

- Registra el tiempo de ejecución de JavaScript y su jerarquía, además del tiempo de ejecución de otras acciones del hilo principal del navegador.
- Registra otros datos auxiliares: uso de memoria, solicitudes de red, capturas de pantalla, tareas (y tareas largas), eventos clave (DCL, FP, LCP), trabajo en hilos, etc
- Puede limitar la velocidad de la red y del CPU
- Puede mostrar tus propios puntos y períodos de tiempo "personalizados"

Identity Verification Solutions x +

localhost:3000

Meet us in person! Our team will be at Fintech Meetup and MRC Vegas this month. Learn more →

persona

Customize how you trus

Choose the building blocks you need to collect, verify, understand, and orchestrate your customers' identities for any use case.

Try it now →

Get a demo →

Performance Tab

localhost #2

Network

Frames

Animations

Timings

Layout Shifts

Main - http://localhost:3000/

Task	Task	Task	Task
Evaluate Script (anonymous)	Time...red	Parse HTML	Event: re...atechange
uee	Func...all (an...s)	Eval...ript (a...s)	Function Call
Ws		(a...s)	Reca...tyle
\$J	(...)	(a...s)	-
PY		(a...s)	f
(anonymous)			d
			l

JS Heap Documents Nodes Listeners GPU Memory

Summary Bottom-Up Call Tree Event Log

Range: 400 ms - 413 ms

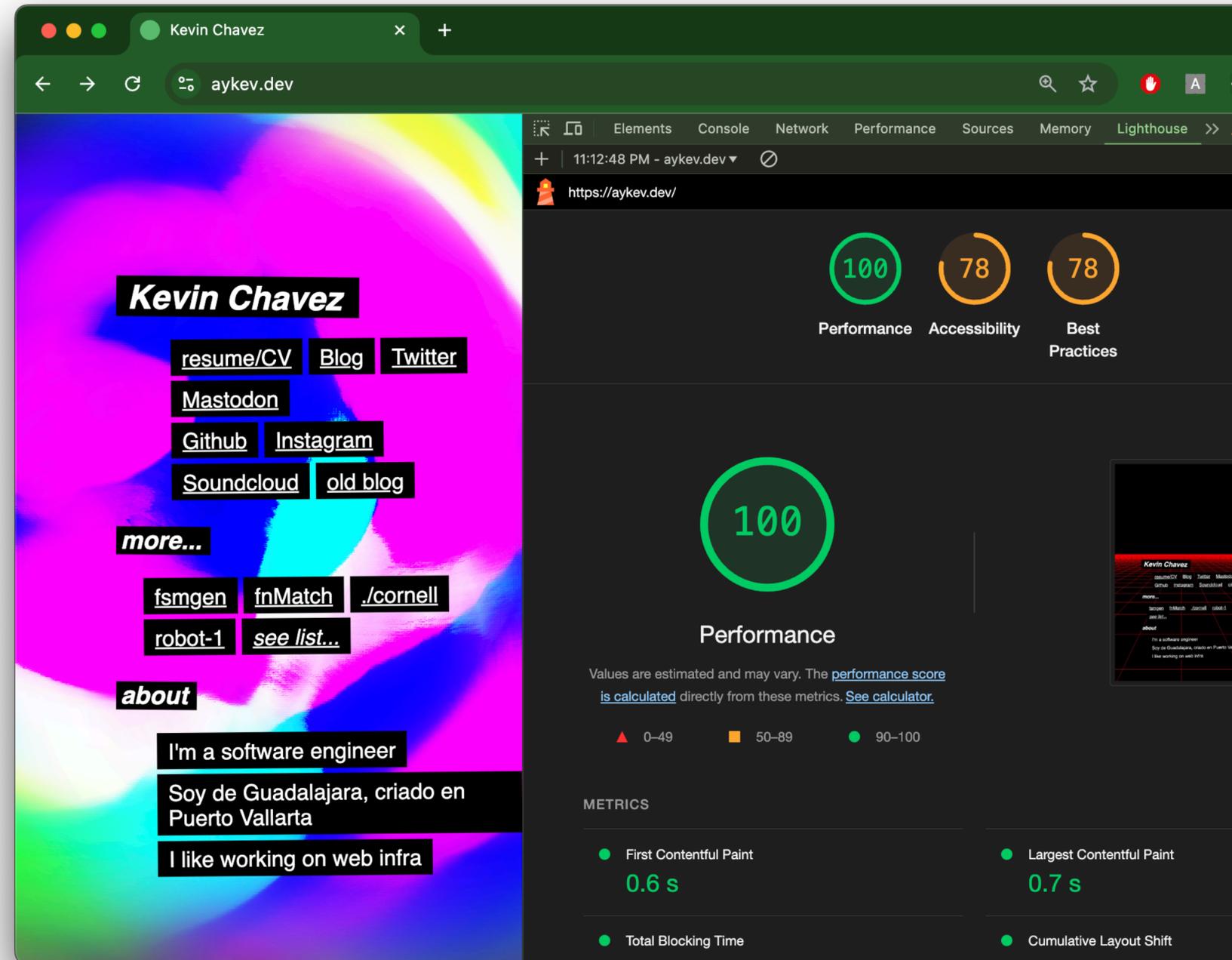
13 ms

- 0 ms Loading
- 8 ms Scripting
- 0 ms Rendering
- 3 ms Painting
- 2 ms System
- 0 ms Idle
- 13 ms Total

Lighthouse

Chrome Developer Tools

- Metricas
- Buen punto de inicio, poco detalle

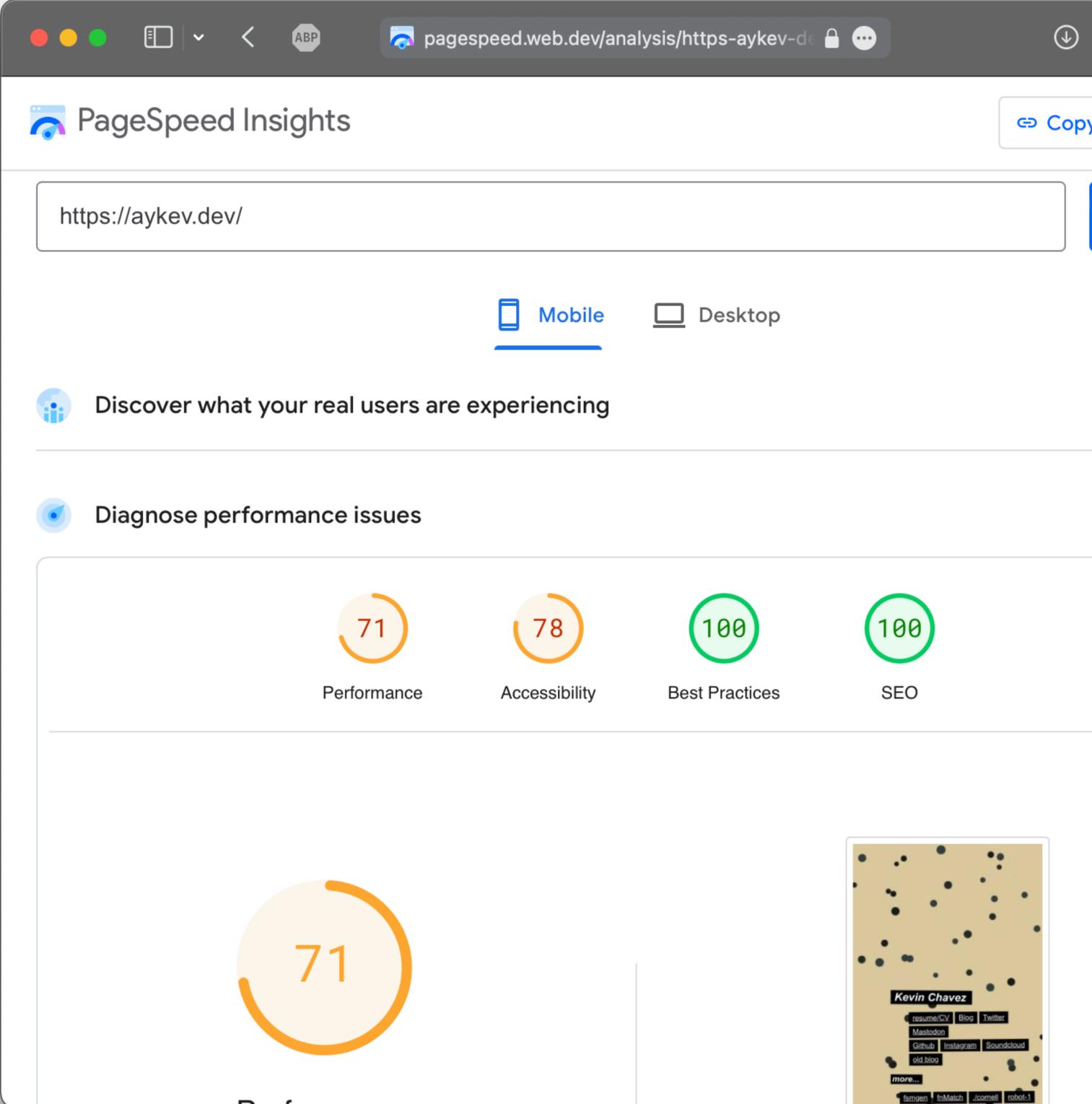


PageSpeed

<https://pagespeed.web.dev>

- Similar a Lighthouse, usan el mismo motor de análisis desde 2018

- Links para compartir reportes



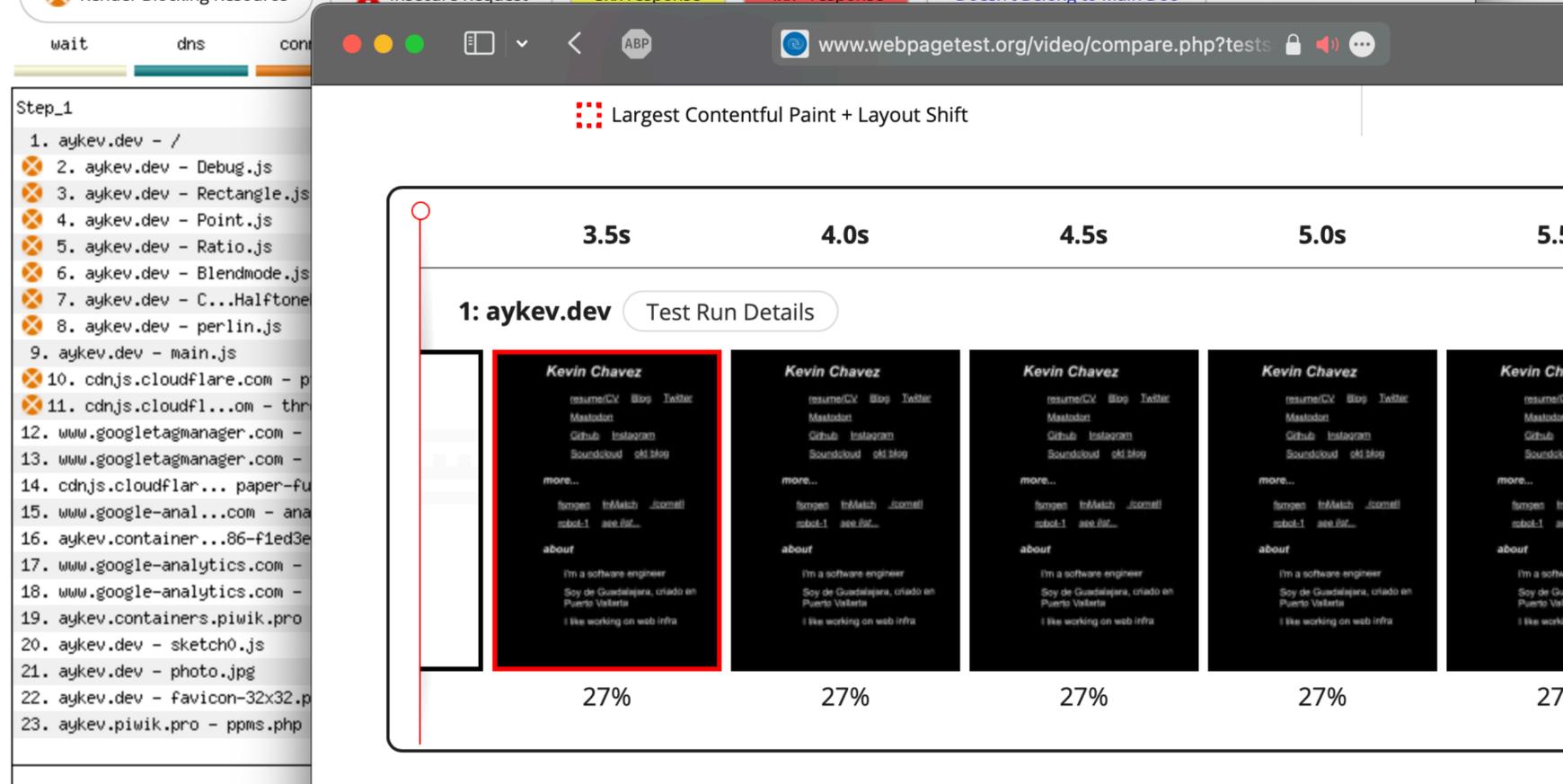
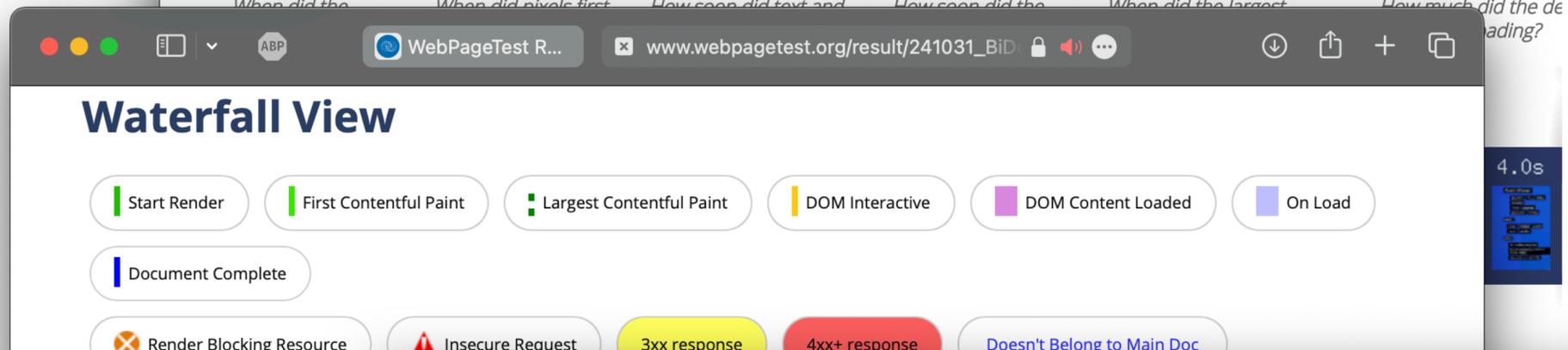
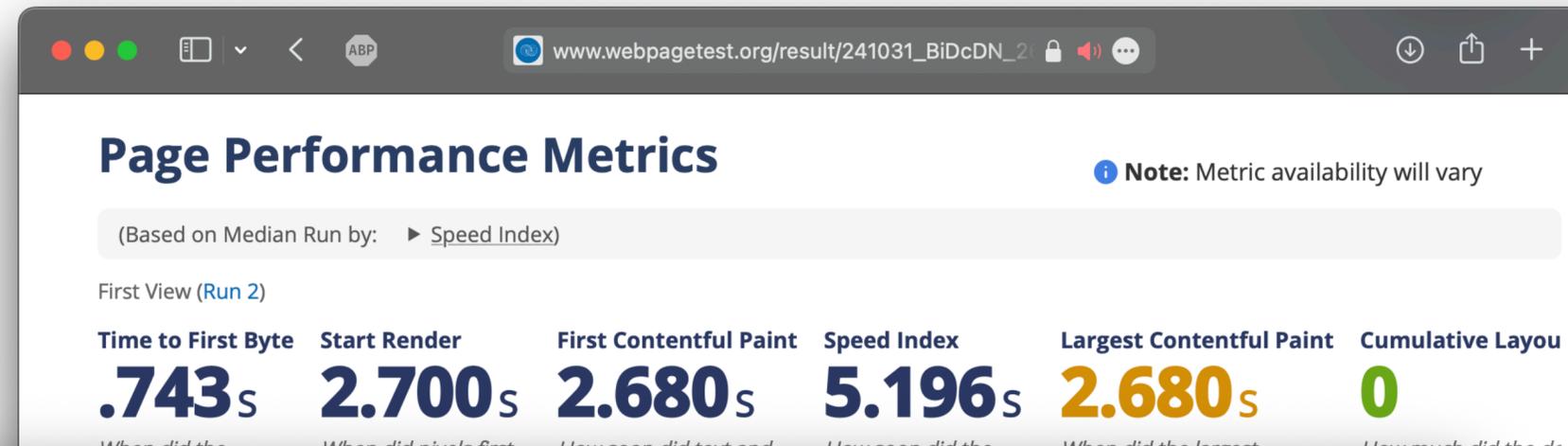
The screenshot shows the PageSpeed Insights interface for the URL <https://aykev.dev/>. The page is set to 'Mobile' view. It displays four performance metrics: Performance (71), Accessibility (78), Best Practices (100), and SEO (100). A large orange circle with the number 71 is prominently displayed in the center of the page, representing the overall performance score. Below the metrics, there is a section for 'Performance' with a large orange circle containing the number 71. On the right side, there is a preview of the website's content, including a bio for 'Kevin Chavez' with links to various social media and portfolio items.

Metric	Score
Performance	71
Accessibility	78
Best Practices	100
SEO	100

WebPageTest

webpagetest.org

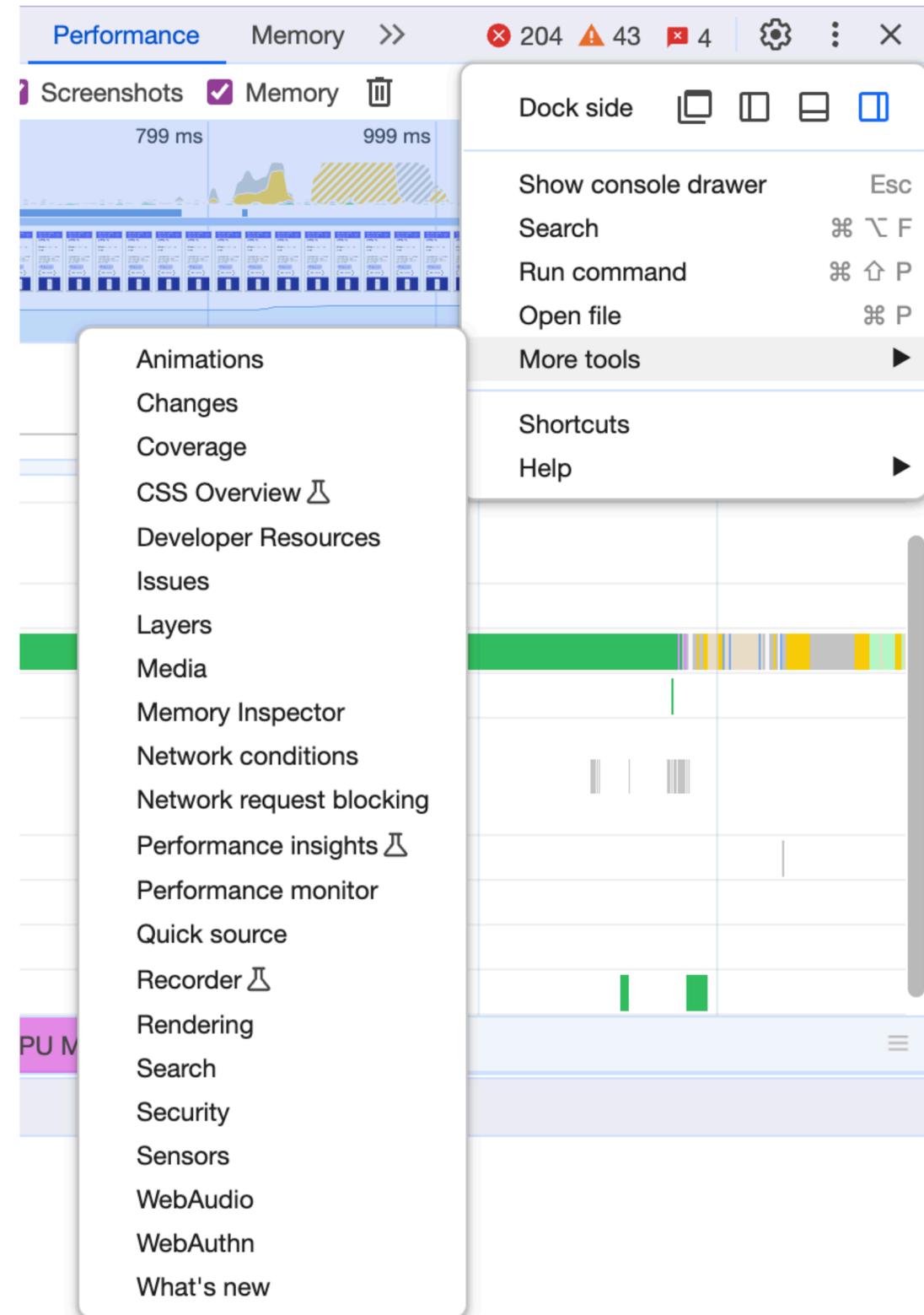
- Mas detalle
- Reportes fáciles de guardar y compartir



iy hay mas!

otras menciones honoríficas

- React Profiler / React Components — en la extensión React Developer Tools
- Medios — ver propiedades sobre reproductores de medios (detalles del decodificador, registros de ffmpeg, eventos de reproducción/pipeline).
- Problemas — advertencias, especialmente sobre futuras deprecaciones
- Cobertura — para encontrar JS/CSS no utilizado
- Inspector de Memoria — para ArrayBuffers, TypedArray, memoria utilizada en WASM, etc



Gracias!