expo QA 24
MADRID
May 28th,
29th, 30th
2024
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Front-end Performance Testing & Microservices:

How to achieve
fast and fluid User Experience
with the Google Core Web Vitals

Isabelle Cosar - Product Engineer/Quality Engineer

expoQA®
MADRID 28th, 29th & 30th May 2024

Agenda

1

Introductions to myself, my company & its operating model

2

The Google Core Web Vitals (CWV), key Front-End Performance metrics

3

Engaging and mobilising service teams with the CWV

4

Example of monitoring, measuring and testing the CWV

Who am I

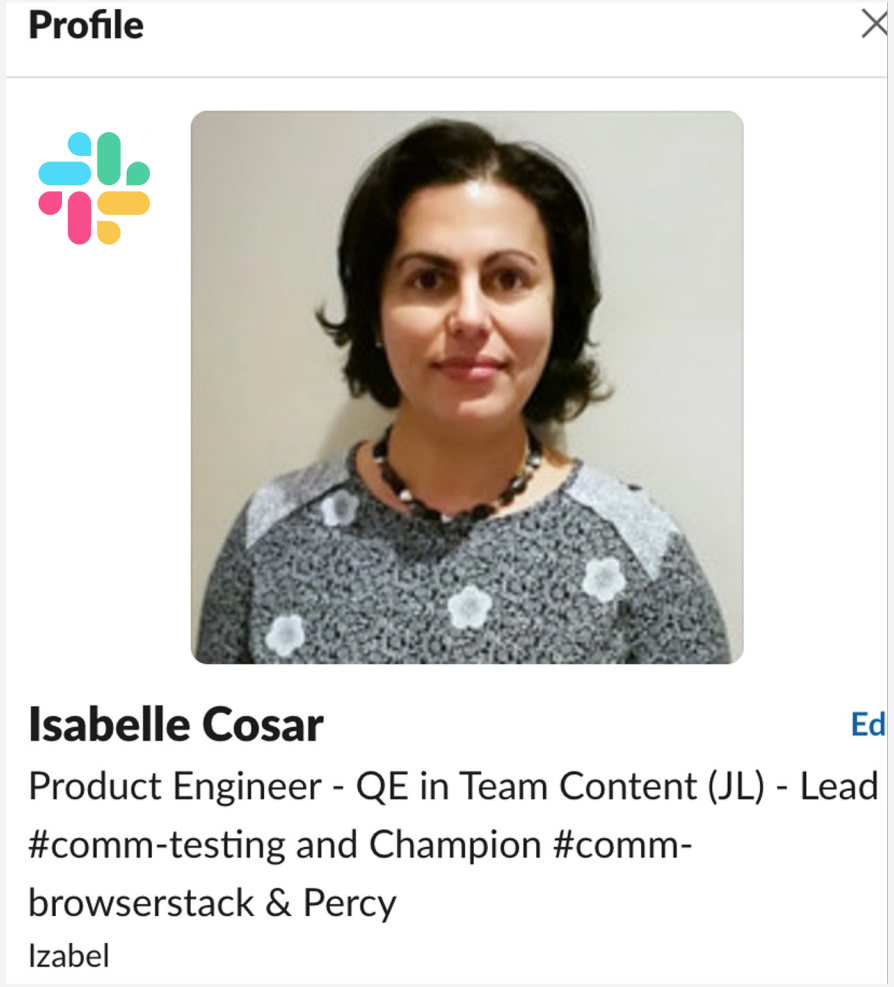
French

Product Engineer / Quality Engineer (QE) at John Lewis Partnership - partner since 2019

25 years' experience in QE, mostly in London, UK. Focus on NFT

Led Non-Functional Testing in Financial Services

Moved into delivery 4 years ago, into a service team



https://www.linkedin.com/in/isabelle-cosar/

2 Google Core Web Vitals (CWV)

They are set of 3 specific page speed and user interaction measurements that have become THE REFERENCE to assess the loading speed, interactivity, and visual stability of a web page. The measurements evolve over time.

We use them as a standard to measure and improve our Front-end / Client-side Performance for our e-commerce website.

https://web.dev/vitals/
https://web.dev/learn-core-web-vitals/

2 The importance of CWV

Overall, optimising for Core Web Vitals helps website owners improve the user experience, increase traffic and revenue, and stay ahead of the competition in search rankings.

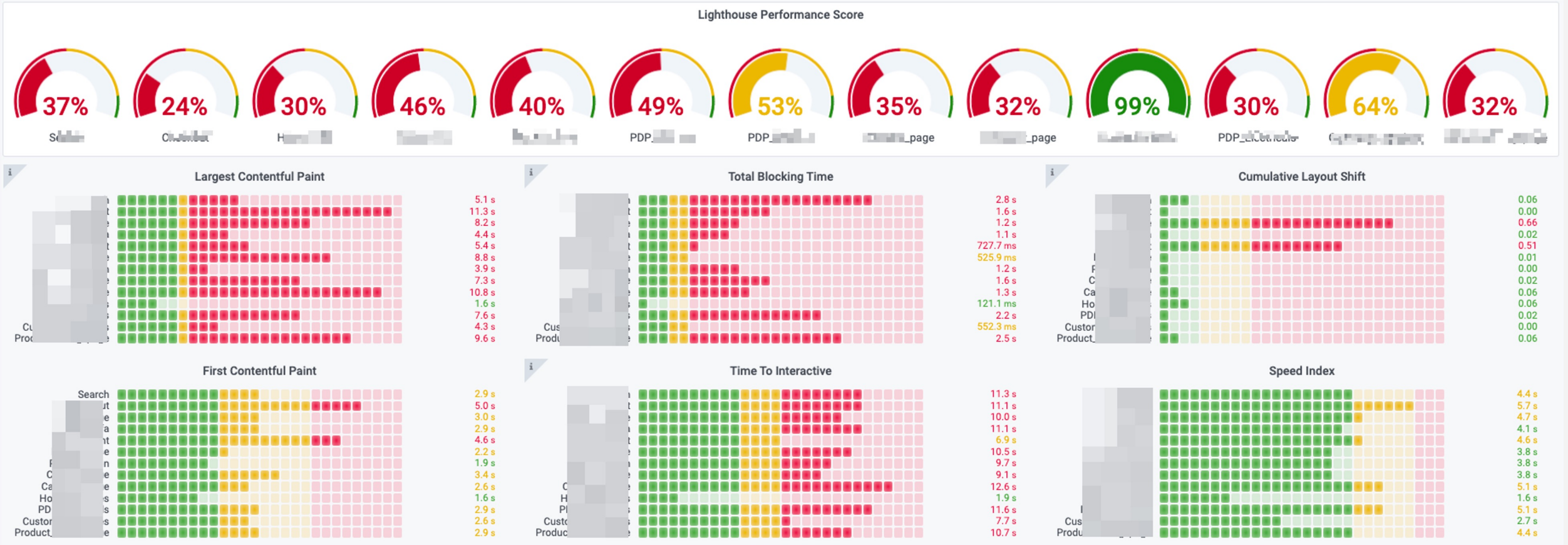
We use them as a standard to measure and improve our Front-end / Client-side Performance for our e-commerce website.

I will explain in part 3 and 4 how we measure the CWV.

3 How our teams were engaged with CWV by the platform team

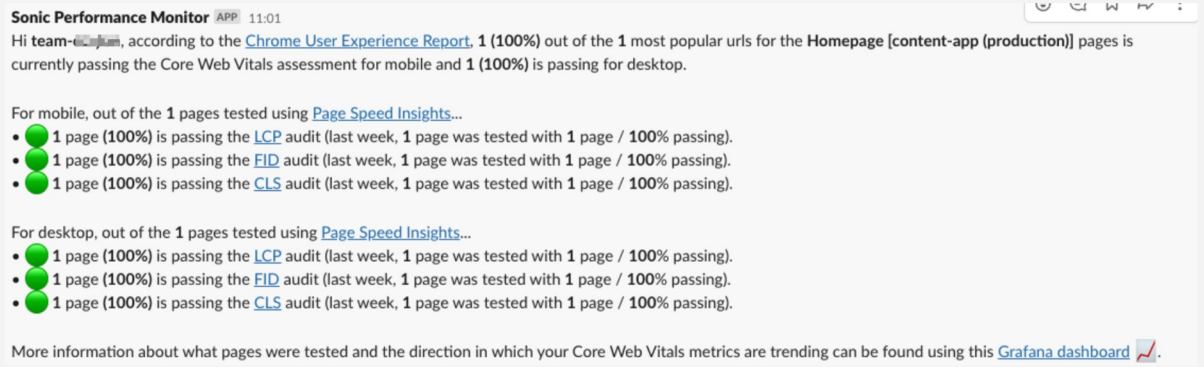
1. Communicating
2. Challenging
3. Supporting with custom tools to test and monitor

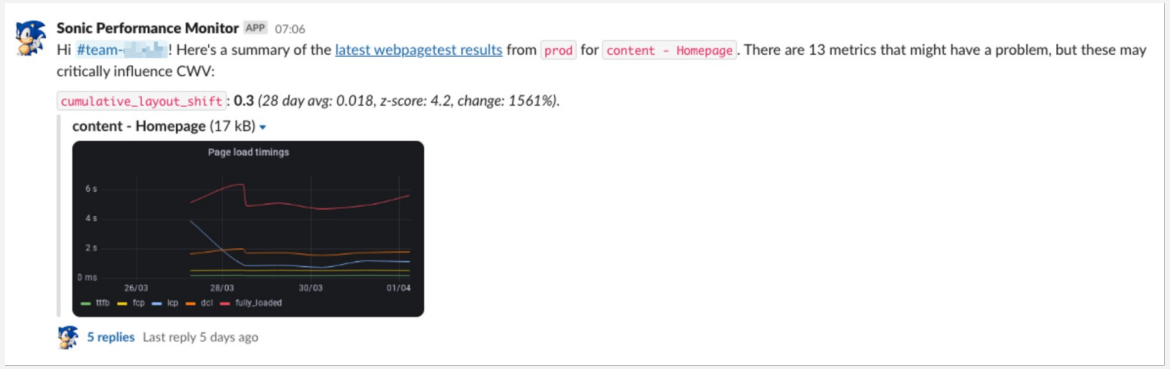
3 Challenging: FE Performance Leaderboard



3 Tooling

1. Sitespeed for testing (Initially)
2. WebPageTest for Testing & Monitoring
3. CWV Production Monitoring
4. Notifications of negative changes in each Microservice Slack channel





3 Key challenges faced & actions taken

1. Getting traction

2. Teams to get involved in a **continuous** way

3. The tooling had to evolve over time to be more adequate to the teams' WoW (Ways of Working) and to provide more accurate data.

4 Real life Example

Starting point: Production issue with CWV

1. Detection: Alerting
2. RCA: Observability & temporary workaround
3. Fixing, Testing & Redeploying

The Homepage

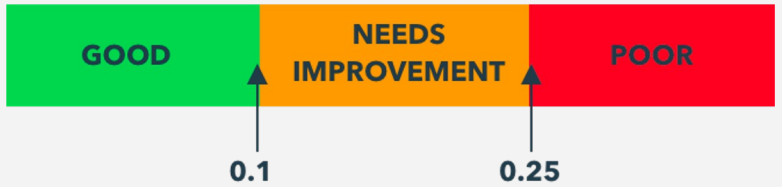
Cumulative Layout Shift

0.302

(Visual Stability)

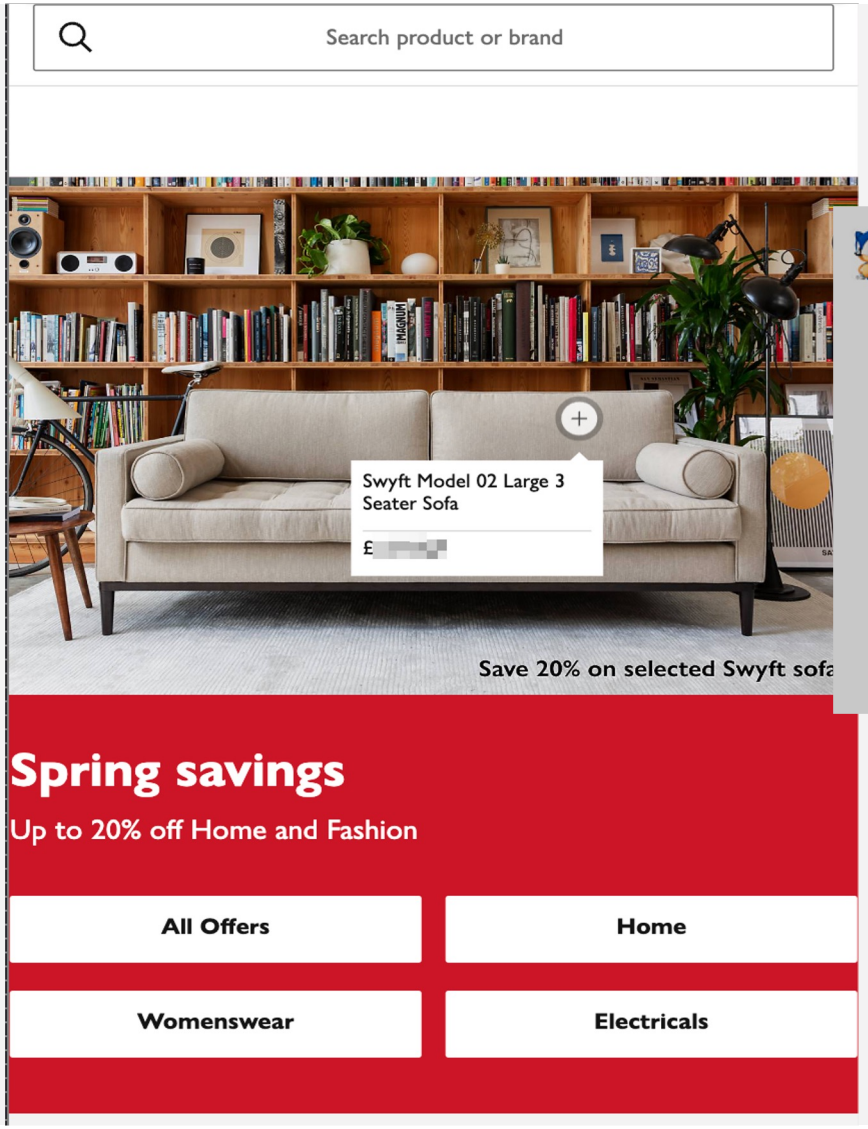
CLS

Cumulative Layout Shift

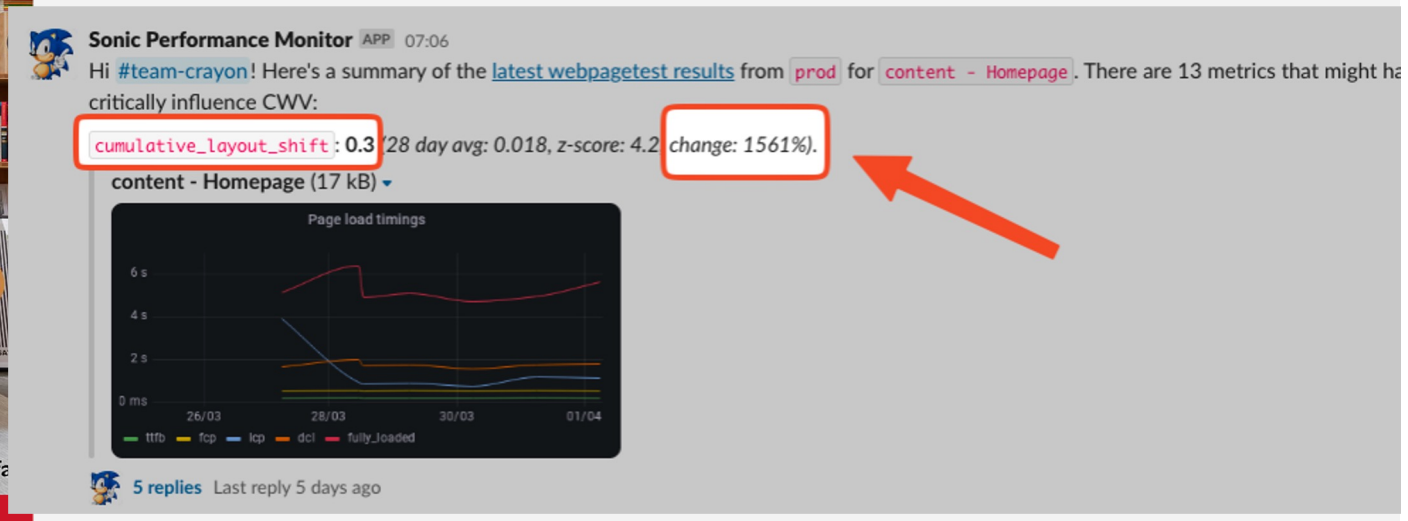


4 Detection

Starting point: Production CWV issue on the Home Page

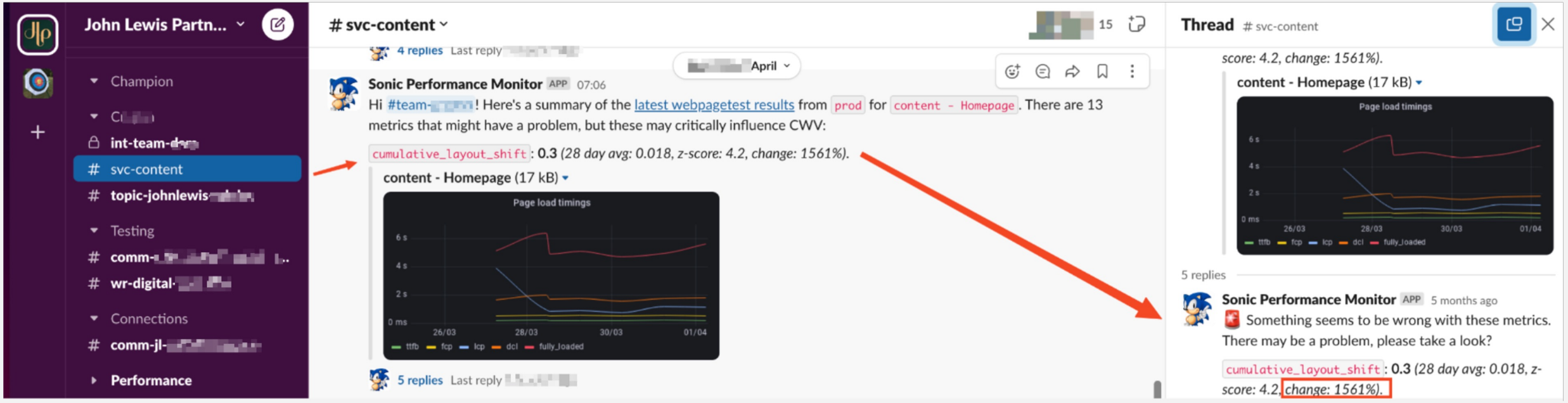


Alert generated in Slack by the WebPageTest tool from the platform team



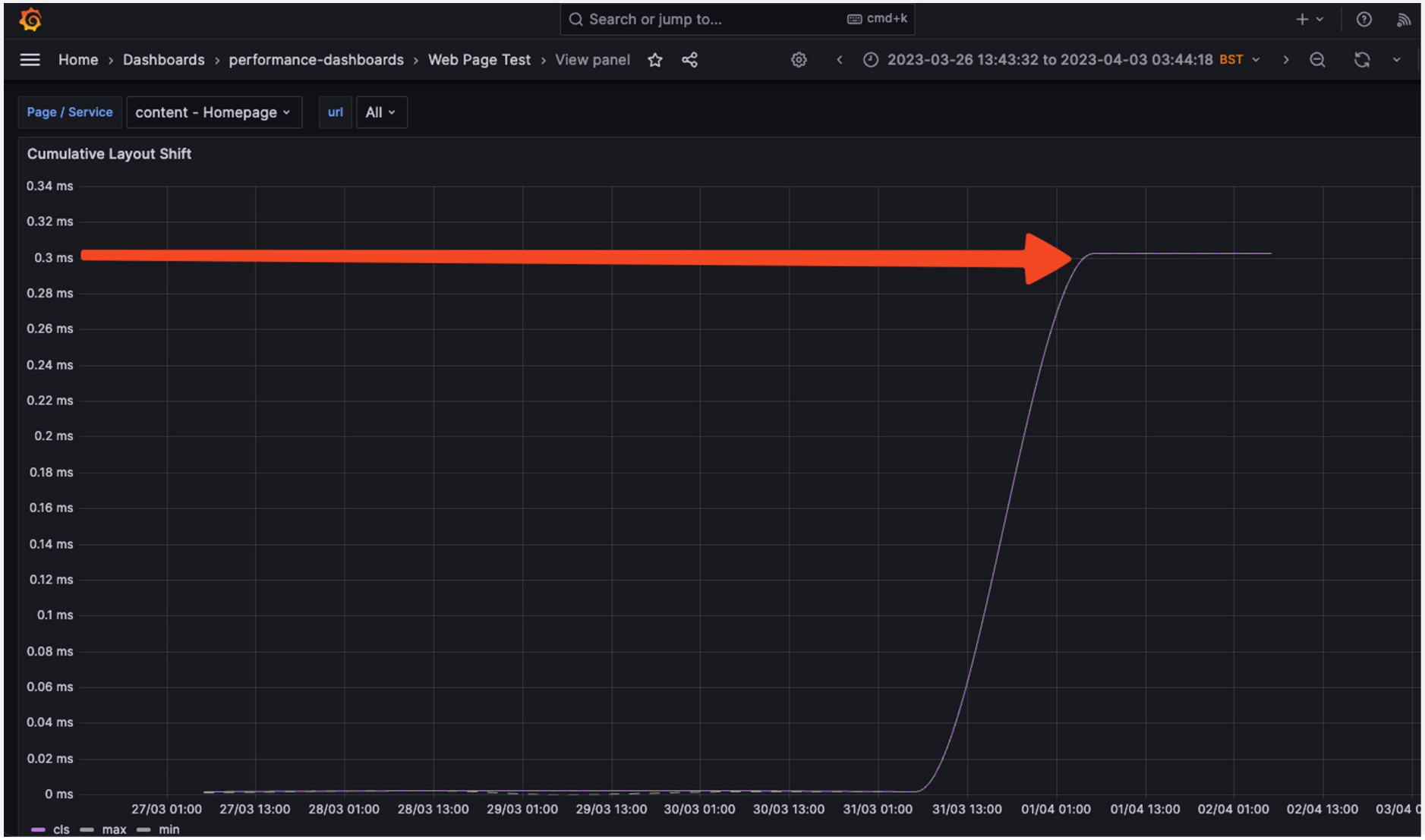
4 Alert in our service alert channel in Slack

Alert generated in Slack by the WebPageTest tool from the platform team



+1561% increase in the CLS !!
Score: 0.3

4 I double checked on the WebPageTest tool dashboard provided by Platform team



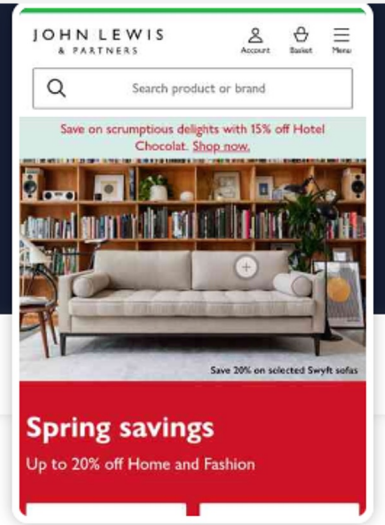
4 I checked for more details in the WebPageTest tool provided by the platform team

URL: https://www.johnlewis.com/ DATE: 02/04/2023, 06:12:58

Webpage Performance Test Result

content - Homepage SETTINGS: PIXEL2 v107 Test Location More Share

View: Details Tools: Export Re-Run Test



Requests Details

Use this page to explore the metric timings and request waterfall for any run of your test.

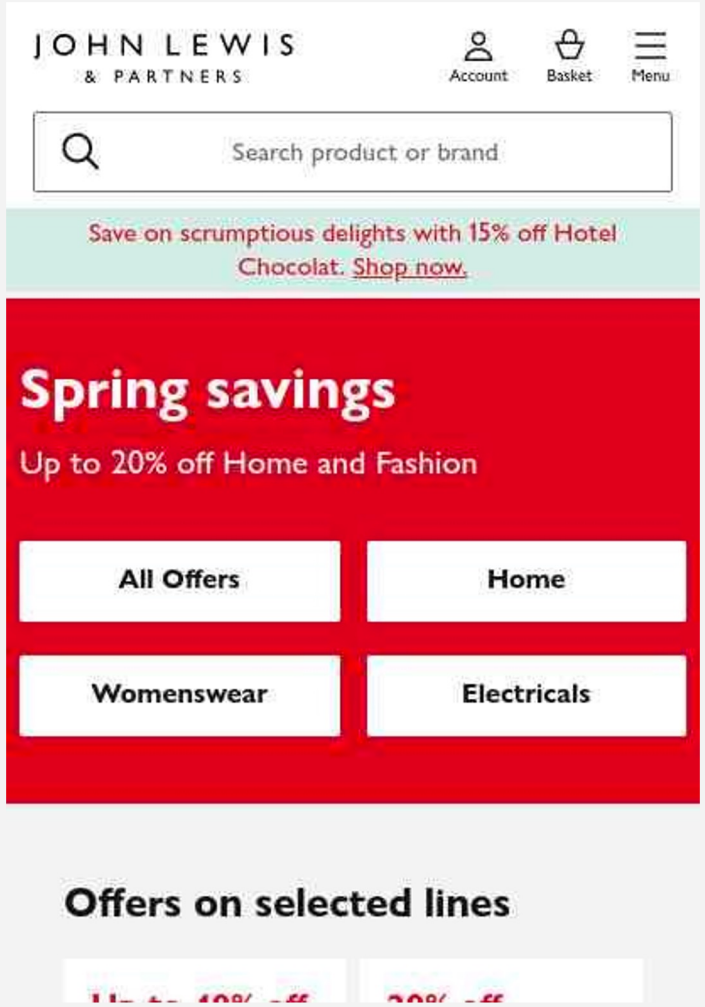
Observed Metrics (Run number 4)

View run details: Run 1 (Repeat View), Run 2 (Repeat View), Run 3 (Repeat View), Run 4 (Repeat View), Run 5 (Repeat View)

FIRST VIEW (RUN 4)

First Byte	Start Render	FCP	Speed Index	LCP	CLS	TBT	DC Time	DC Requests	DC Bytes	Time	Requests	Total Bytes
.192s	.500s	.510s	.898s	1.171s	.302	≥ .550s	4.387s	256	4,327 KB	5.346s	279	4,428 KB

4 I ran some manual visual checks in the Home Page

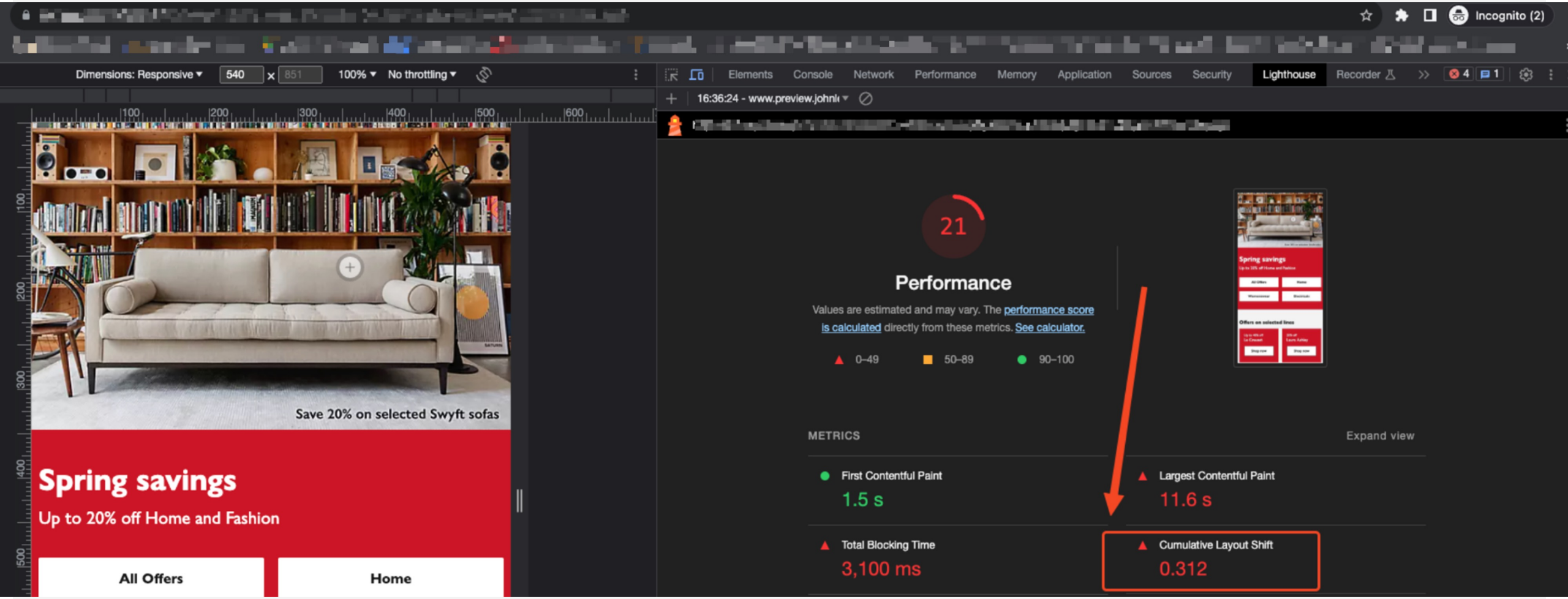


47% loaded

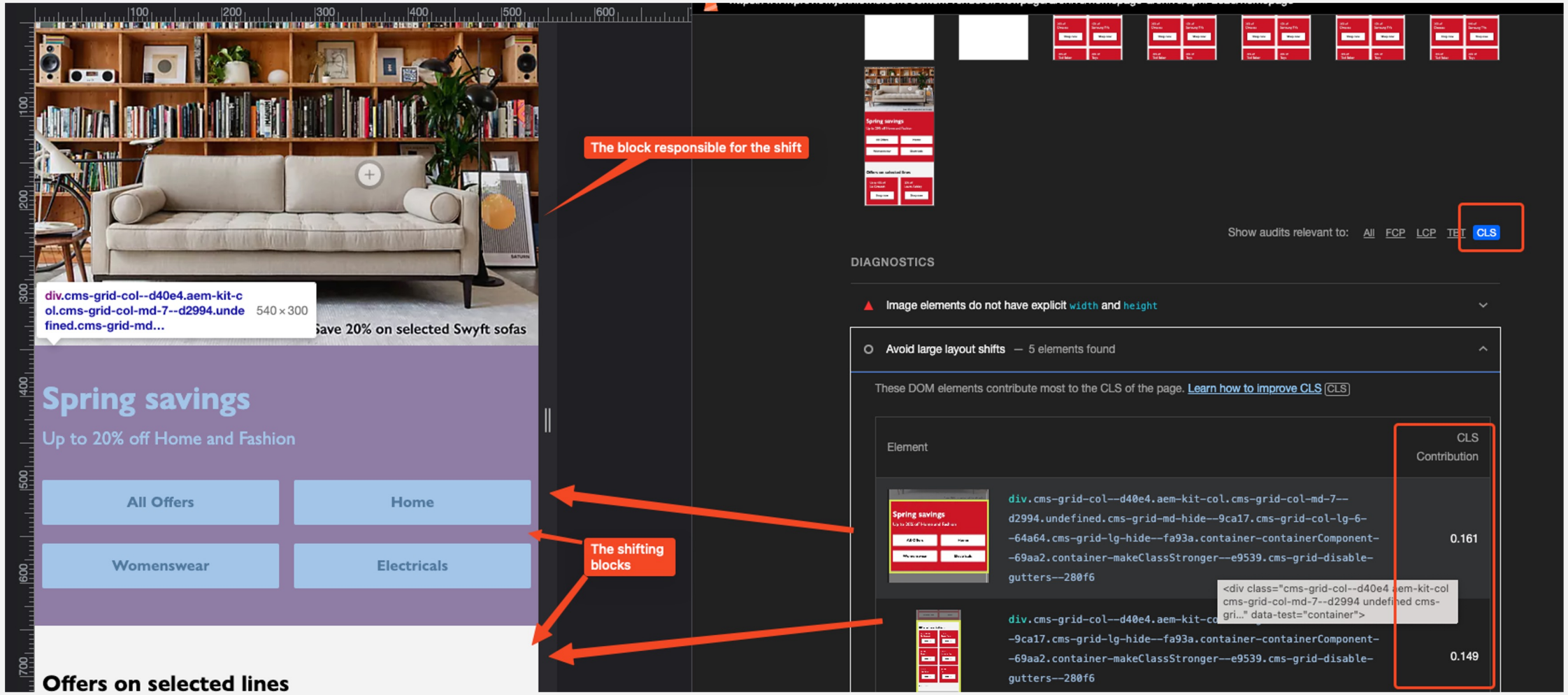
.....

100% loaded

4 I got confirmation with Lighthouse from the Dev tools (Chrome/Edge)



4 I got more details on the RCA from Lighthouse

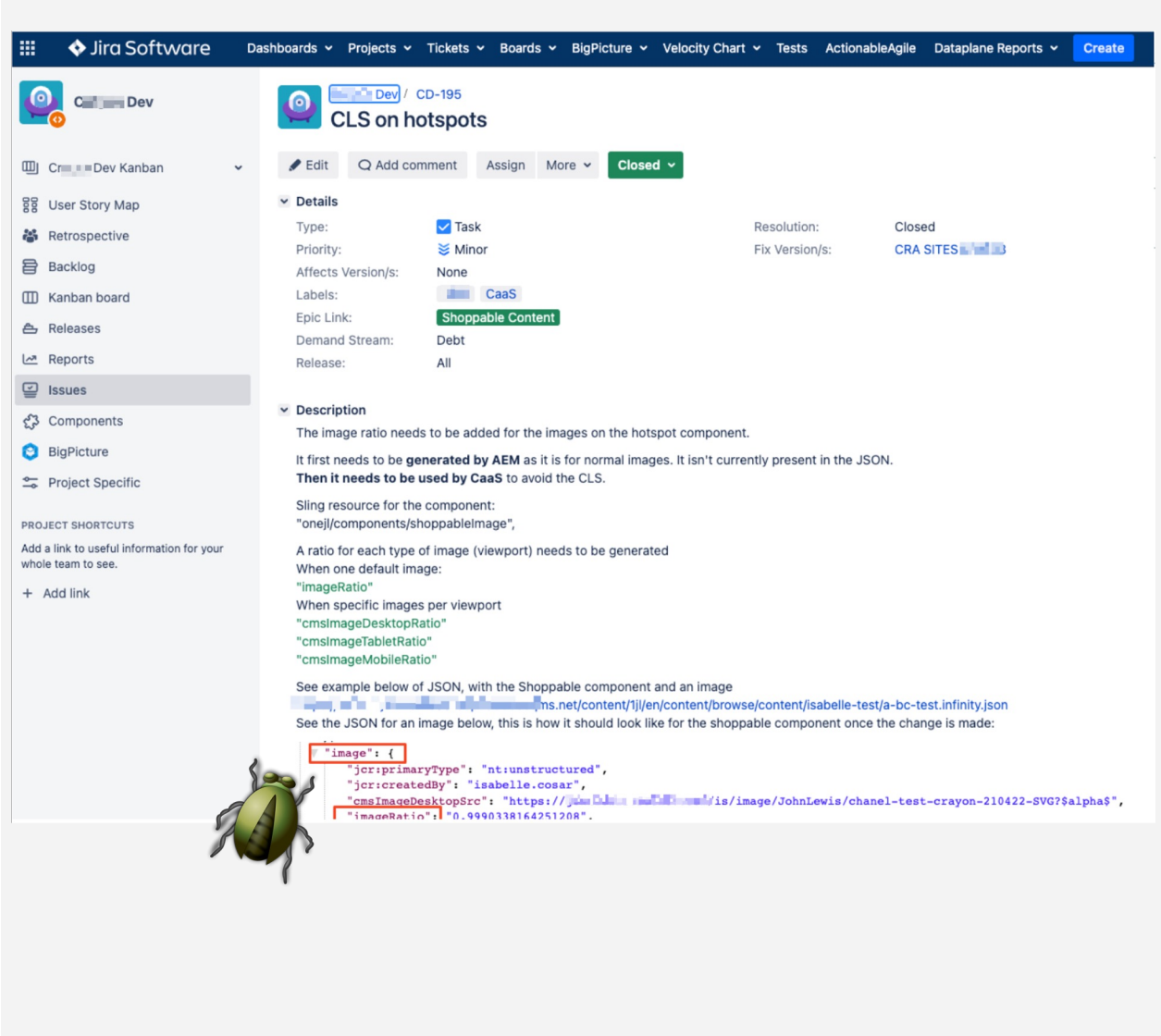


4 I discussed with my team then raised a bug ticket

Problem & fix: the image wasn't passing its ratio to the browser

- Passing the image ratio/size to the browser helps improve CLS by providing the browser with advance knowledge of the image's aspect ratio before it finishes loading

- Allocation of Space: When the browser knows the size of the image in advance & it can allocate the necessary space for the image while the page is loading. By reserving the appropriate space, the browser ensures that other elements on the page are not displaced when the image finally loads.



4 The Hero got immediately replaced by a standard image component passing its ratio to the browser

Thread

[redacted] 3 days ago
@[redacted] @[redacted] @[redacted] - please can you remove the hotspot from the hero banner (I think it's only on mobile at the moment), we believe it's causing huge CLS issues. @Isabelle Cosar FYI

11 replies

[redacted] 3 days ago
Hey @[redacted] Ah I see. Sure. I wanted to check with Isabelle about the current CLS issue. Removing the Hotspot now

Isabelle Cosar 3 days ago
From Desktop & tablet too please @[redacted]
(edited)
1

Isabelle Cosar 3 days ago
And the hotspot wasn't working on desktop as the URL also needed to be repeated on the desktop tab btw @[redacted]

[redacted] 3 days ago
Sure I will . Oh I see! I wasn't aware. Thanks for letting me know

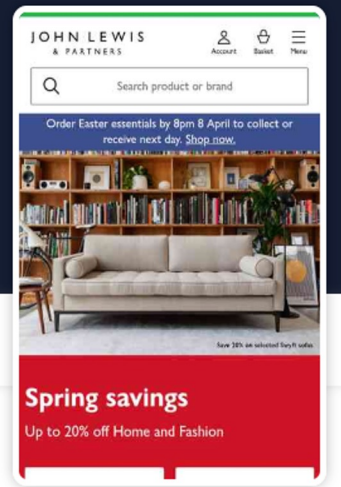
Isabelle Cosar 3 days ago
No worries and you are right @[redacted] the shoppable component was causing the high CLS as we have not implemented the image ratio for it as we have for most of the other images component. This means the browser doesn't know the size of that component before loading it and can't reserve the space for it before loading...

URL: https://www.johnlewis.com/ DATE: 04/04/2023, 06:14:25

Webpage Performance Test Result

content - Homepage SETTINGS: PIXEL2 v107 Test Location More Share

View: Details Tools: Export Re-Run Test



Requests Details

Use this page to explore the metric timings and request waterfall for any run of your test.

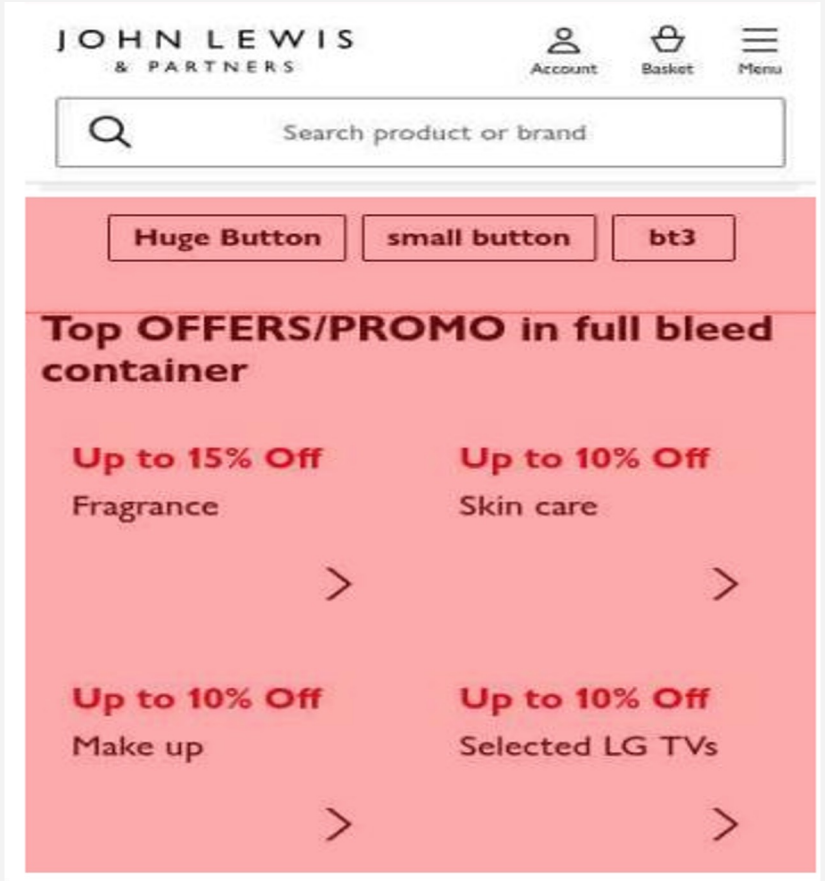
Observed Metrics (Run number 2)

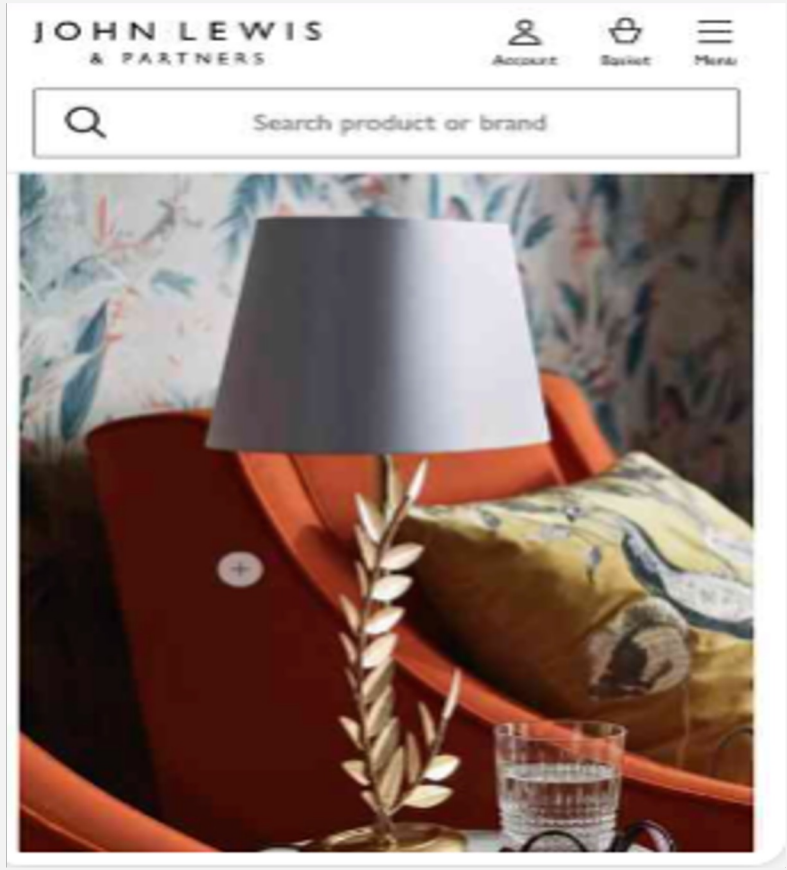
View run details: Run 1 (Repeat View), Run 2 (Repeat View), Run 3 (Repeat View), Run 4 (Repeat View), Run 5 (Repeat View)

FIRST VIEW (RUN 2)

First Byte	Start Render	FCP	Speed Index	LCP	CLS	TBT	DC Time	DC Requests	DC Bytes	Time	Requests	Total Bytes
.208 s	.500 s	.494 s	.765 s	.811 s	.001	≥ .480 s	3.822 s	257	4,311 KB	4.479 s	279	4,413 KB

4 I created a baseline test page in our test environment, monitored by WebPageTest



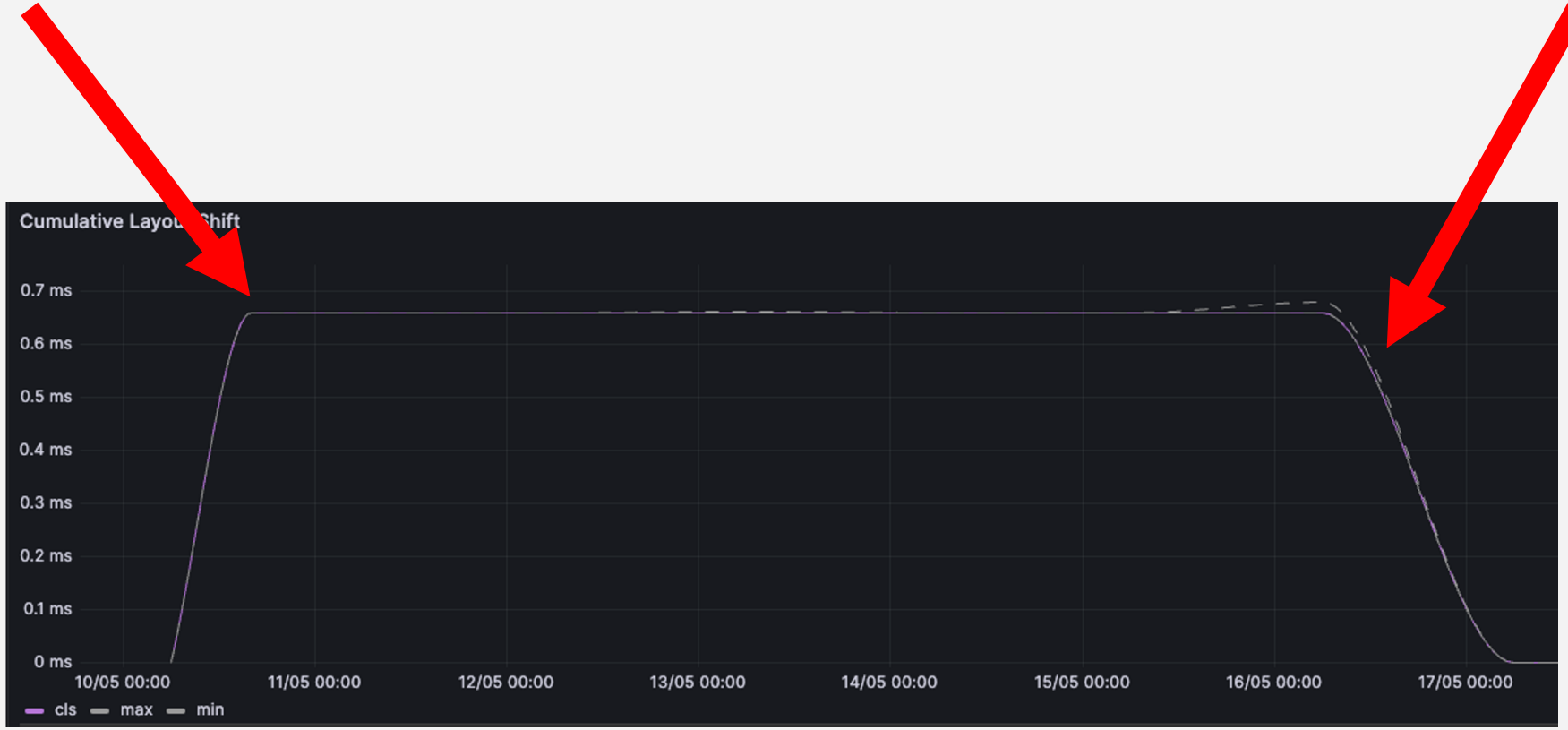


47% loaded ..... **100% loaded**

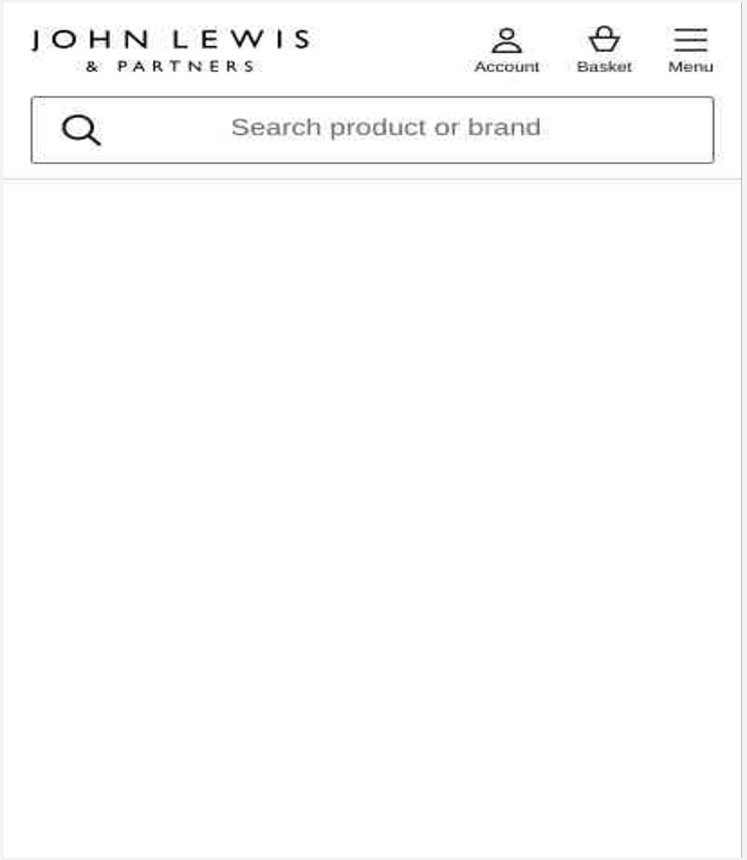
4 A fix was deployed in the test environment and the CLS disappeared. CLS score = 0!!

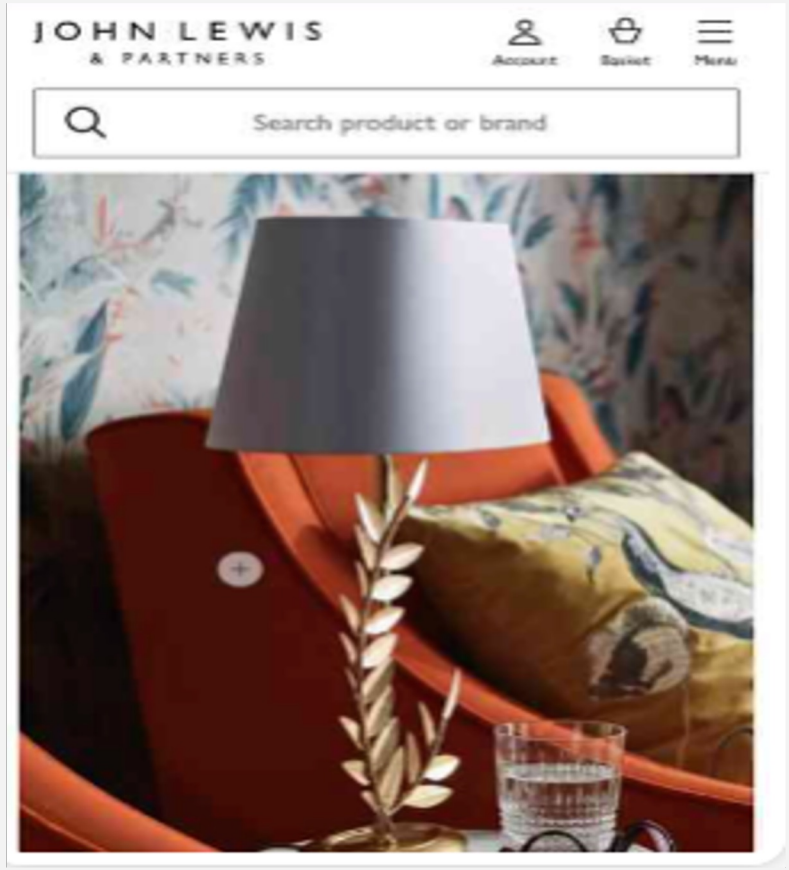
Baseline test page deployed in test on 10/5

Fix deployed in test on 16/5



4 Now the page first loads a blank space quickly replaced by the hotspot component and not causing any shift in the page



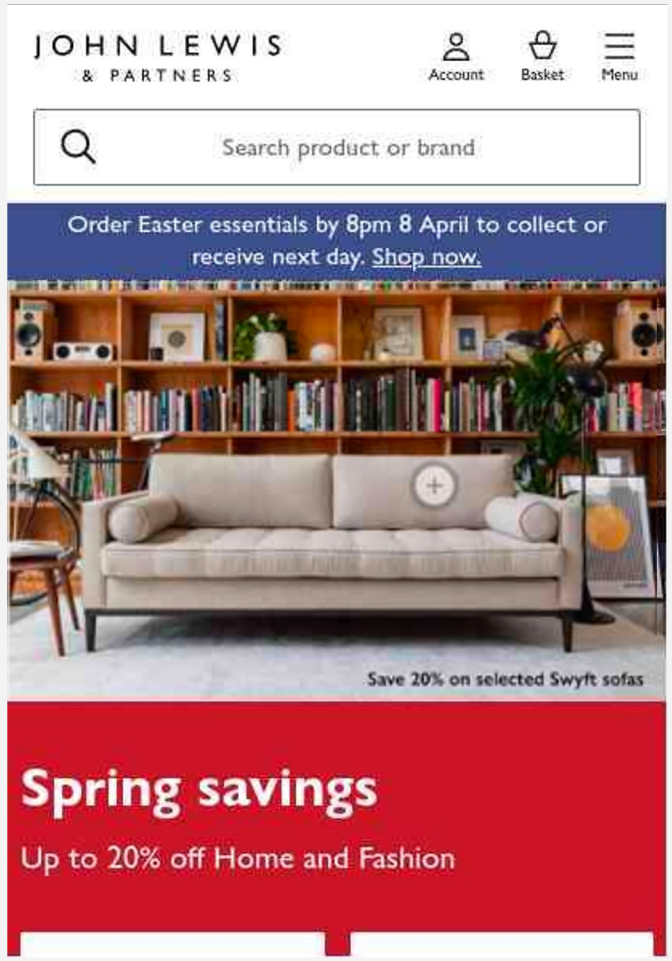


47% loaded ..... **100% loaded**

4 And this is what it did on the Home Page in Production

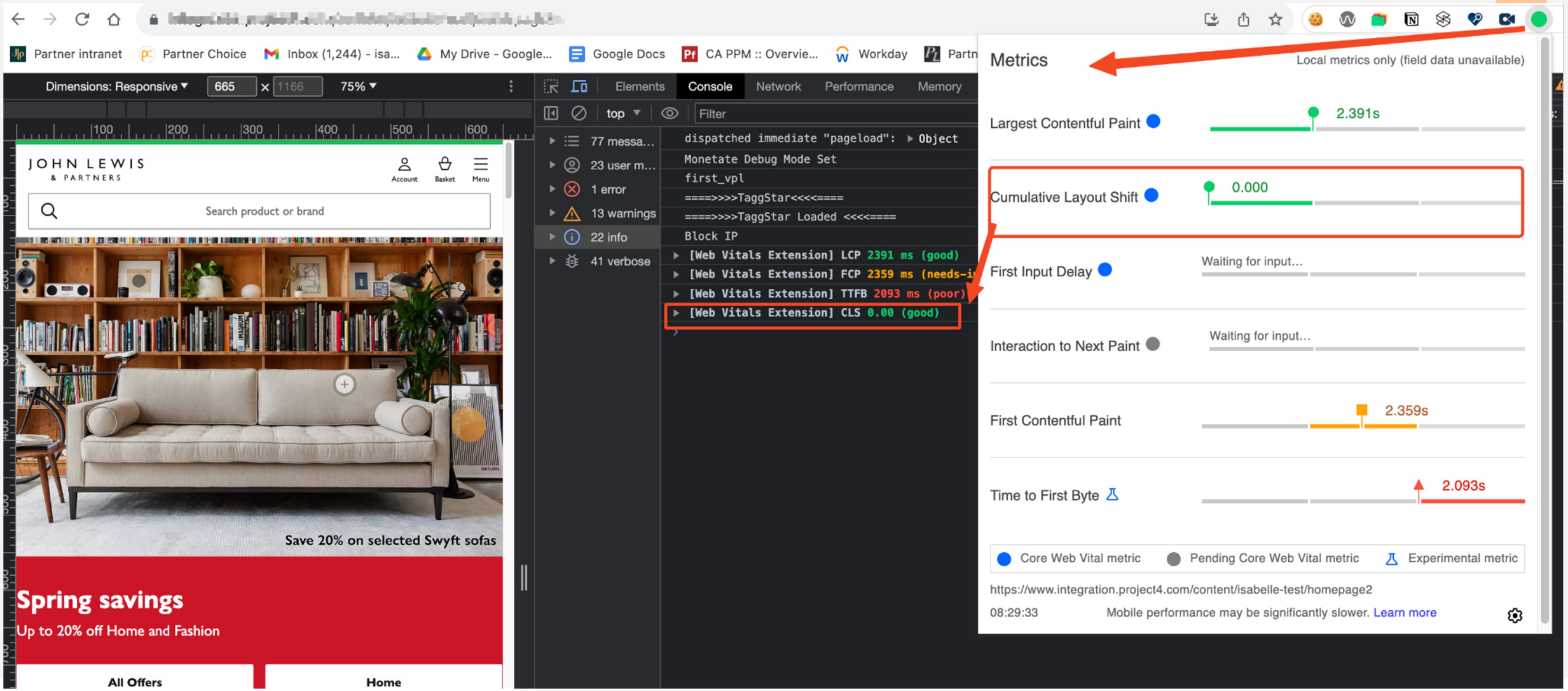
47% loaded

.....



100% loaded

4 Confirmed by testing in production with a Web Vitals Chrome extension/plugin



4 Confirmed by the WebPageTest tool

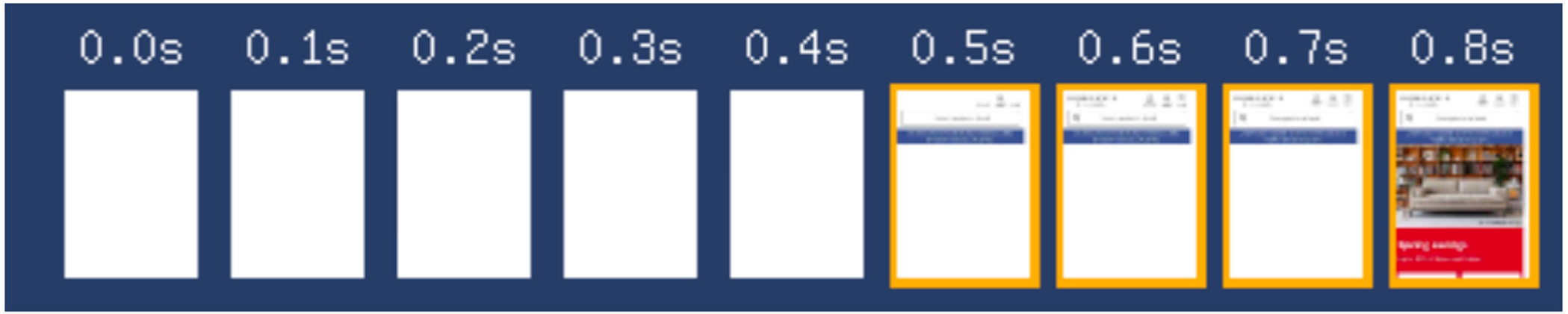
Observed Metrics (Run number 2)

View run details: Run 1 (Repeat View), Run 2 (Repeat View), Run 3 (Repeat View), Run 4 (Repeat View), Run 5 (Repeat View)

FIRST VIEW (RUN 2)

First Byte	Start Render	FCP	Speed Index	LCP	CLS	TBT	DC Time	DC Requests	DC Bytes	Time	Requests	Total Bytes
.208 s	.500 s	.494 s	.765 s	.811 s	.001	≥ .480 s	3.822 s	257	4,311 KB	4.479 s	279	4,413 KB

Visual Page Loading Process (Explore)



Bootstrap_start	snaptr	generated-content-percent	generated-content-size	domInteractive	domContentLoaded	loadEvent
0.312s	2.575s	1.080	8.510	1.097s	1.589s - 1.594s (0.005s)	3.811s - 3.881s (0.070s)

Any
Questions

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May 28th,
29th, 30th
2024
Thank you for attending
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