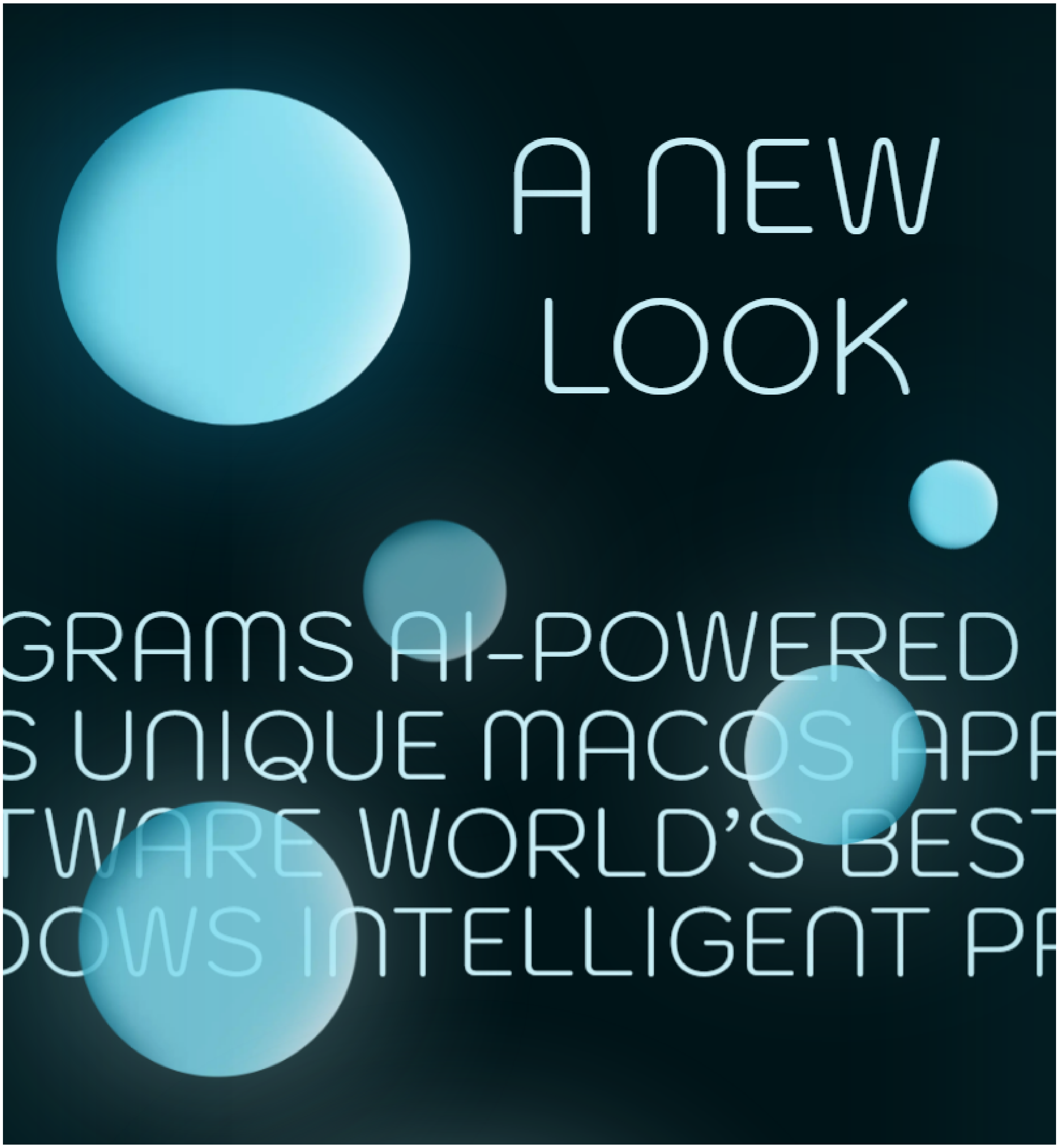
ABTco - Optimization of the main page of the website

Optimization and analysis by Oleksii Shereta

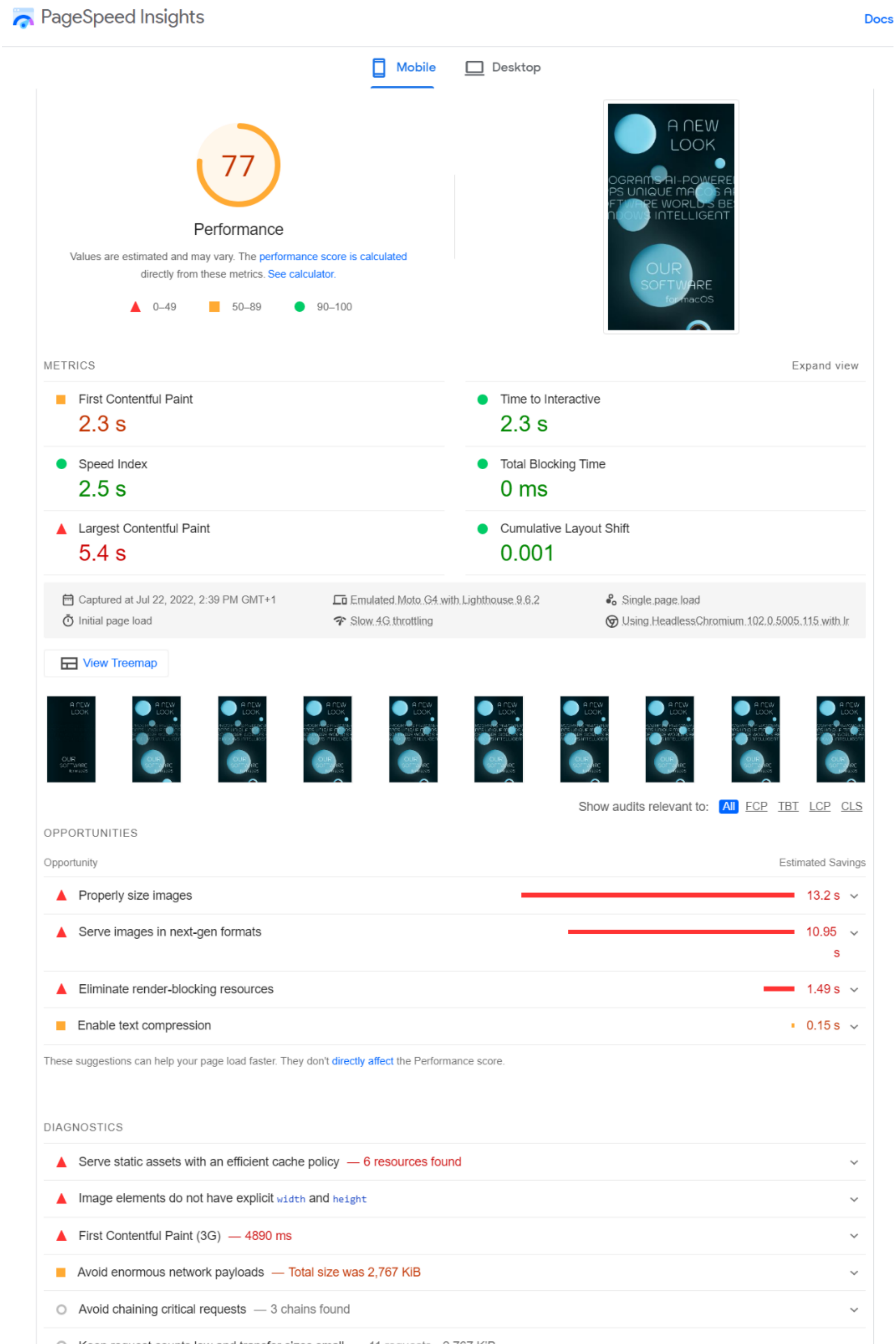
http://www.abtco.us/

In this short document, I will cover the actions, taken to enhance the main page of ABTco — after a rebranding and full redevelopment of the company's main page, a thorough SEO optimization was required.



A screenshot of the newly rebranded main page of abtco.us.

After receiving the page from the developers, I conducted an initial audit of the page, which highlighted multiple issues, mostly related to metadata, performance, accessibility, and images.



77

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.

▲ 0–49 ■ 50–89 ● 90–100

METRICS

Expand view

■ First Contentful Paint 2.3 s	● Time to Interactive 2.3 s
● Speed Index 2.5 s	● Total Blocking Time 0 ms
▲ Largest Contentful Paint 5.4 s	● Cumulative Layout Shift 0.001

Captured at Jul 22, 2022, 2:39 PM GMT+1

Emulated Moto G4 with Lighthouse 9.6.2

Single page load

Initial page load

Slow 4G throttling

Using HeadlessChromium 102.0.5005.115 with lr

View Treemap

Show audits relevant to: All FCP TBT LCP CLS

OPPORTUNITIES

Opportunity	Estimated Savings
▲ Properly size images	13.2 s
▲ Serve images in next-gen formats	10.95 s
▲ Eliminate render-blocking resources	1.49 s
■ Enable text compression	0.15 s

These suggestions can help your page load faster. They don't directly affect the Performance score.

DIAGNOSTICS

▲ Serve static assets with an efficient cache policy — 6 resources found

▲ Image elements do not have explicit `width` and `height`

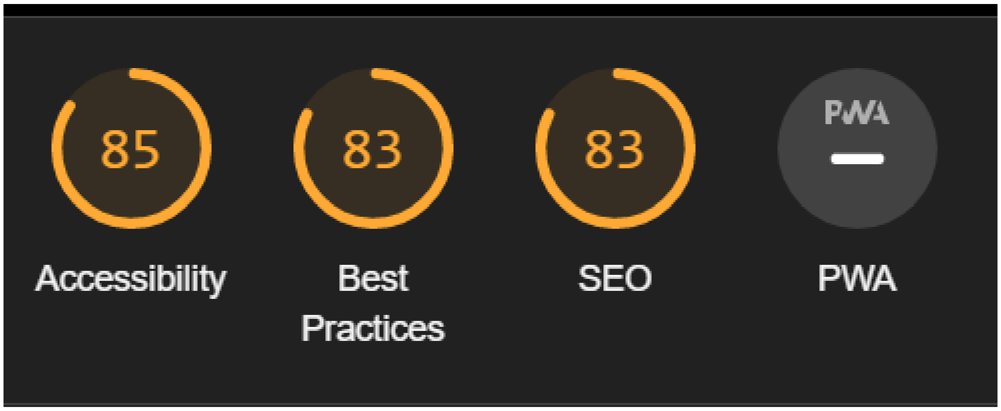
▲ First Contentful Paint (3G) — 4890 ms

■ Avoid enormous network payloads — Total size was 2,767 KiB

○ Avoid chaining critical requests — 3 chains found

○ Keep request counts low and transfer sizes small — 11 requests • 2,767 KiB

The page’s LCP and FCP on 3G values are quite high. In general, the page’s performance could be greatly improved — the page’s main issue was poorly-optimized images, which is an easily solvable problem.



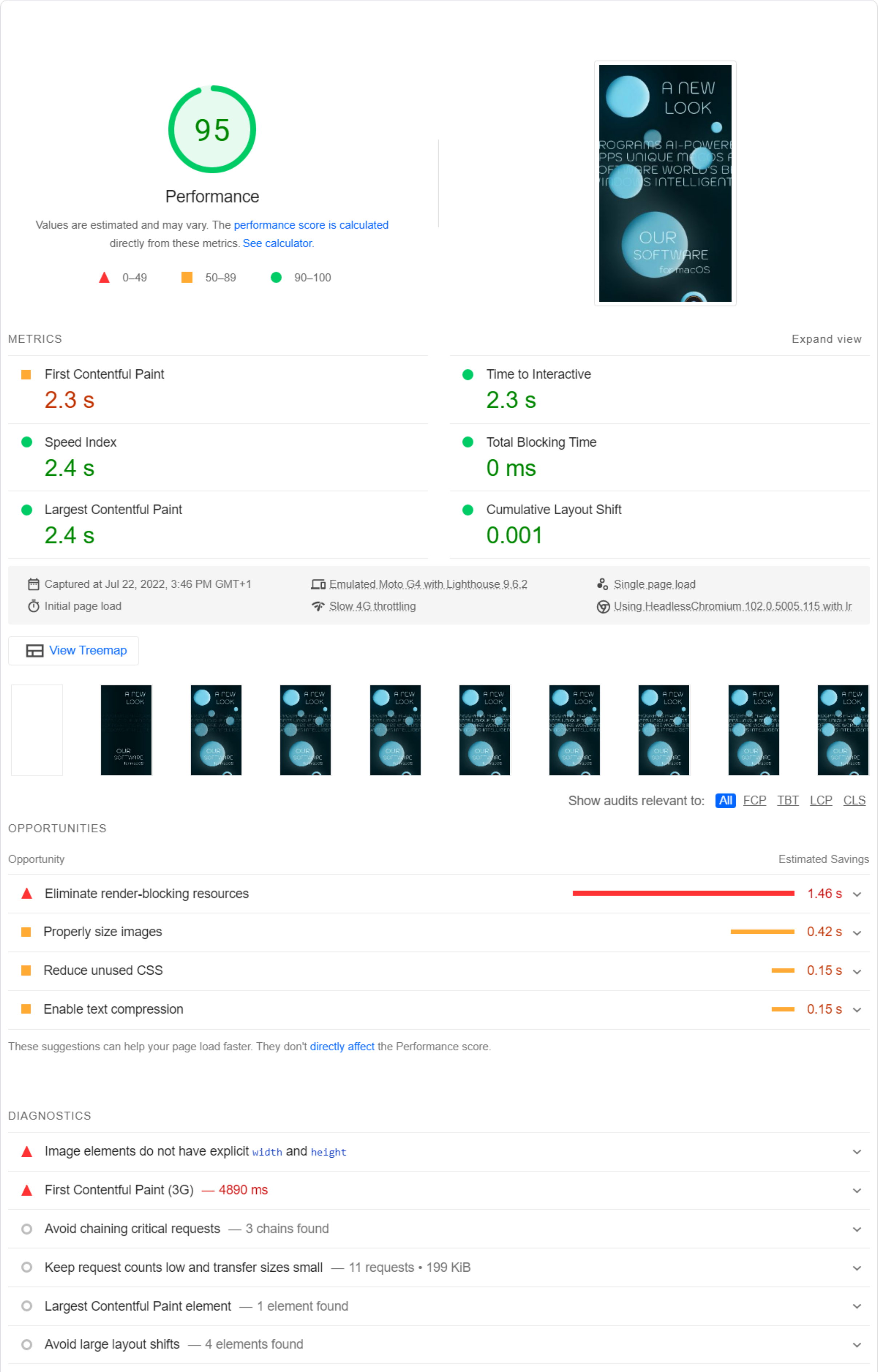
85 Accessibility

83 Best Practices

83 SEO

PWA — PWA

Other metrics were in acceptable conditions, yet they also can be significantly improved.
I started with the performance — my main priority was to fix the image-optimization issues. Developers and I worked together to convert the images into new format *WEBP*, which offers amazing compression capabilities and transparency at the same time. After converting all images of the first page to WEBP, we achieved an amazing performance improvement:



95

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.

▲ 0–49 ■ 50–89 ● 90–100

METRICS

Expand view

■ First Contentful Paint 2.3 s	● Time to Interactive 2.3 s
● Speed Index 2.4 s	● Total Blocking Time 0 ms
● Largest Contentful Paint 2.4 s	● Cumulative Layout Shift 0.001

Captured at Jul 22, 2022, 3:46 PM GMT+1
Initial page load
Emulated Moto G4 with Lighthouse 9.6.2
Slow 4G throttling
Single page load
Using HeadlessChromium 102.0.5005.115 with lr

View Treemap

Show audits relevant to: All FCP TBT LCP CLS

OPPORTUNITIES

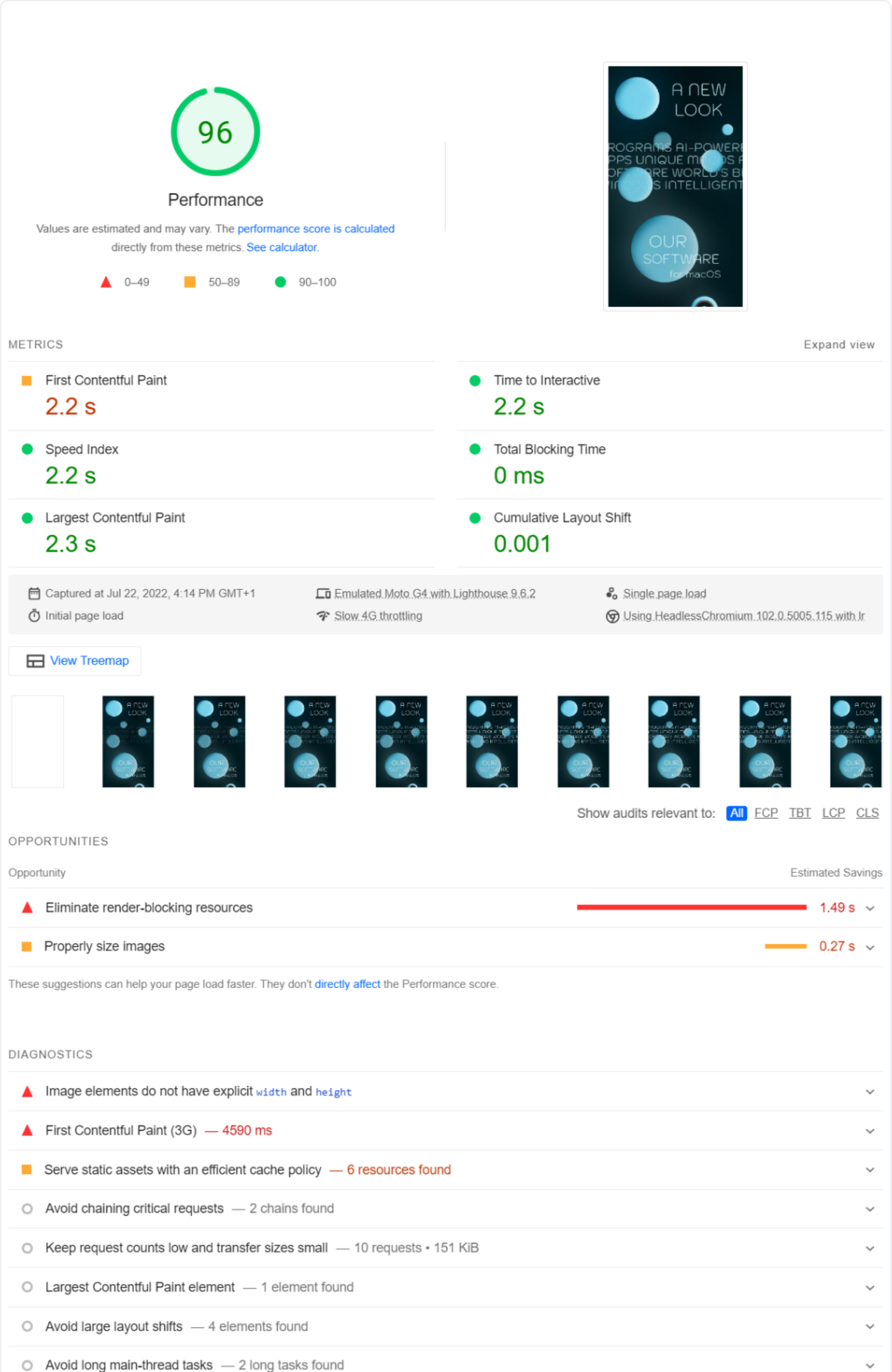
Opportunity	Estimated Savings
▲ Eliminate render-blocking resources	1.46 s
■ Properly size images	0.42 s
■ Reduce unused CSS	0.15 s
■ Enable text compression	0.15 s

These suggestions can help your page load faster. They don't directly affect the Performance score.

DIAGNOSTICS

- ▲ Image elements do not have explicit `width` and `height`
- ▲ First Contentful Paint (3G) — 4890 ms
- ○ Avoid chaining critical requests — 3 chains found
- ○ Keep request counts low and transfer sizes small — 11 requests • 199 KiB
- ○ Largest Contentful Paint element — 1 element found
- ○ Avoid large layout shifts — 4 elements found

“Performance” metric changed its value from **77% to 95%**, an amazing result. LCP was improved from 5.4 seconds to 2.4 seconds, the main page **became 2.2 times faster**. Simply by optimizing the images, we gained significant performance improvement. But we did not stop our optimization here — there is still some room for improvement. For now, we decided to work on other performance-related factors.



96

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.

▲ 0–49 ■ 50–89 ● 90–100

METRICS Expand view

■ First Contentful Paint
2.2 s

● Time to Interactive
2.2 s

● Speed Index
2.2 s

● Total Blocking Time
0 ms

● Largest Contentful Paint
2.3 s

● Cumulative Layout Shift
0.001

Captured at Jul 22, 2022, 4:14 PM GMT+1
Initial page load
Emulated Moto G4 with Lighthouse 9.6.2
Slow 4G throttling
Single page load
Using HeadlessChromium 102.0.5005.115 with lr

View Treemap

Show audits relevant to: All FCP TBT LCP CLS

OPPORTUNITIES

Opportunity Estimated Savings

▲ Eliminate render-blocking resources 1.49 s

■ Properly size images 0.27 s

These suggestions can help your page load faster. They don't directly affect the Performance score.

DIAGNOSTICS

▲ Image elements do not have explicit `width` and `height`

▲ First Contentful Paint (3G) — 4590 ms

■ Serve static assets with an efficient cache policy — 6 resources found

○ Avoid chaining critical requests — 2 chains found

○ Keep request counts low and transfer sizes small — 10 requests • 151 KiB

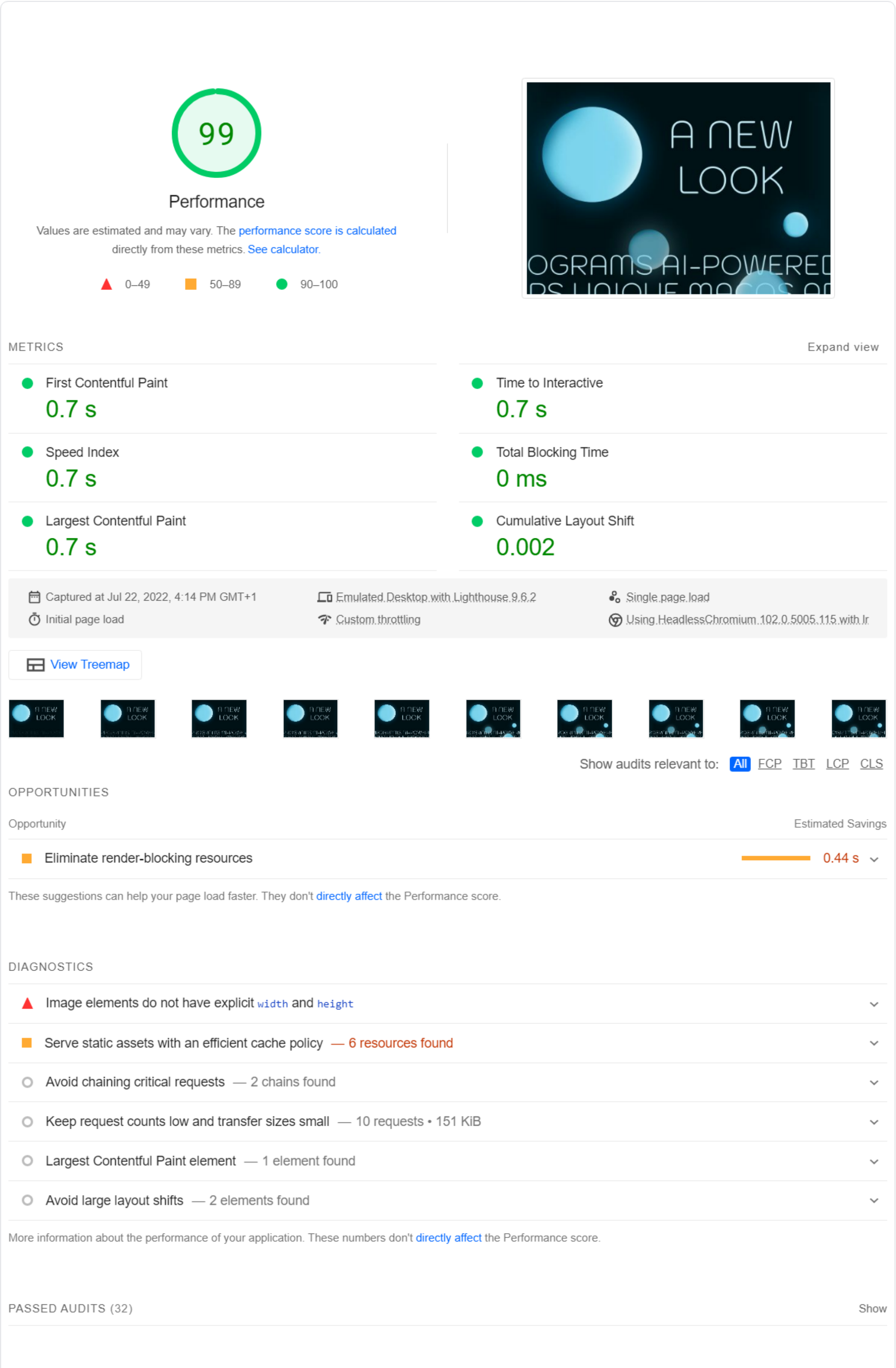
○ Largest Contentful Paint element — 1 element found

○ Avoid large layout shifts — 4 elements found

○ Avoid long main-thread tasks — 2 long tasks found

96% — a nice small improvement, not very significant, but still pleasing. In order to achieve that, I asked developers to enable the “compression of text” and also minify the HTML code of the page. Developers of abtco.us have listened to my proposal and installed two special “middlewares” to the backend of the website that compress and minify the code in real-time. It allowed us to improve the performance of all pages of the website, at the same time. On this particular page, the effect of our actions was not significant, but on other pages, for example, on pages that contain a large DOM tree, these middlewares will bring notable performance improvement. But again, we did not stop there.

Developers and I continued to tweak the options of the WEBP converter, and we were able to reduce the size of the images even more — we tweaked the opacity-quality argument, and general quality, and resized the program logos:



99

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.

▲ 0–49 ■ 50–89 ● 90–100

METRICS

Expand view

● First Contentful Paint
0.7 s

● Time to Interactive
0.7 s

● Speed Index
0.7 s

● Total Blocking Time
0 ms

● Largest Contentful Paint
0.7 s

● Cumulative Layout Shift
0.002

Captured at Jul 22, 2022, 4:14 PM GMT+1

Emulated Desktop with Lighthouse 9.6.2

Single page load

Initial page load

Custom throttling

Using HeadlessChromium 102.0.5005.115 with lr

View Treemap

Show audits relevant to: All FCP TBT LCP CLS

OPPORTUNITIES

Opportunity	Estimated Savings
■ Eliminate render-blocking resources	0.44 s

These suggestions can help your page load faster. They don't directly affect the Performance score.

DIAGNOSTICS

▲ Image elements do not have explicit `width` and `height`

■ Serve static assets with an efficient cache policy — 6 resources found

○ Avoid chaining critical requests — 2 chains found

○ Keep request counts low and transfer sizes small — 10 requests • 151 KiB

○ Largest Contentful Paint element — 1 element found

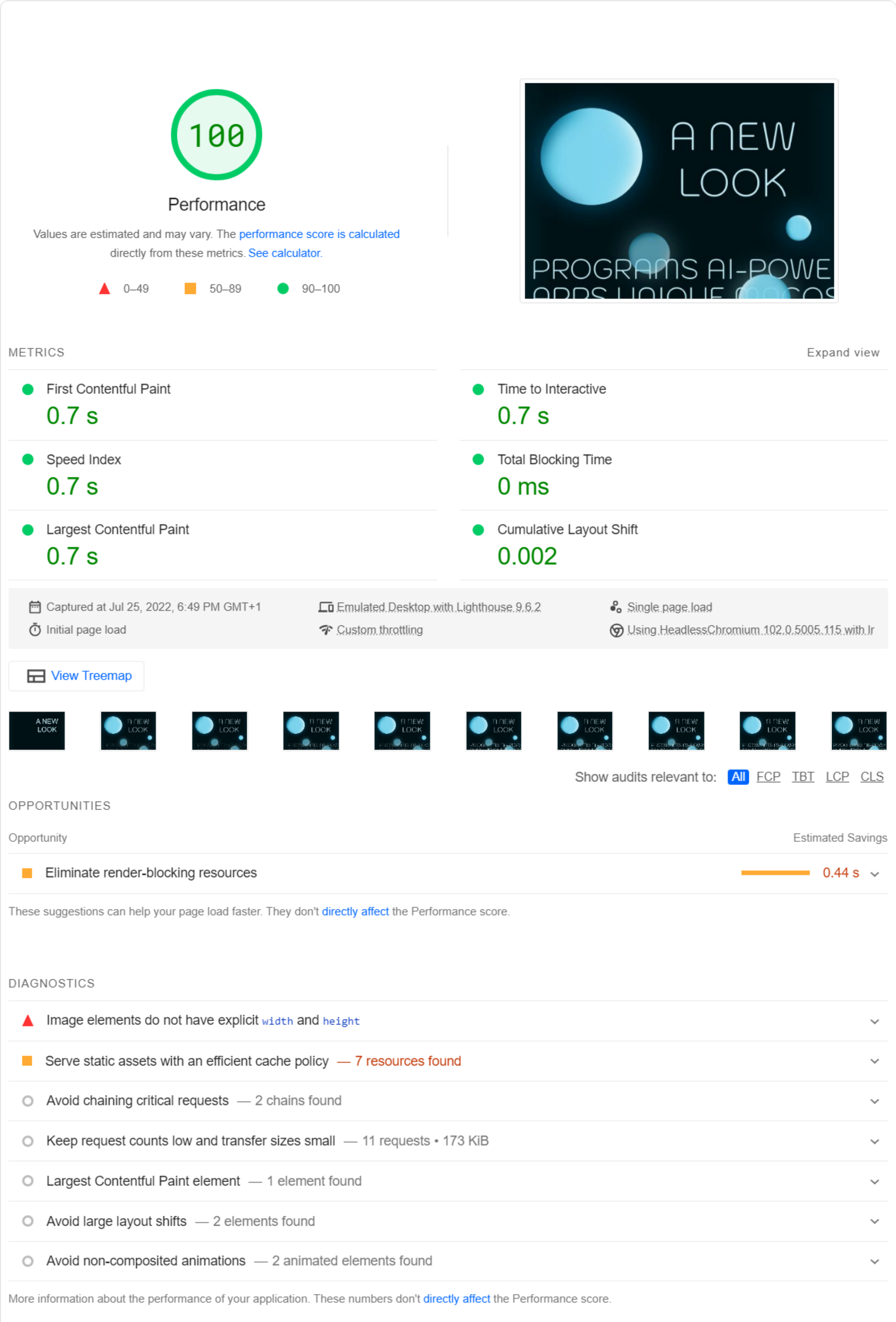
○ Avoid large layout shifts — 2 elements found

More information about the performance of your application. These numbers don't directly affect the Performance score.

PASSED AUDITS (32)

Show

99% “Performance” score in mobile mode, and even **100%** in desktop mode!



100

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.

▲ 0–49 ■ 50–89 ● 90–100

METRICS Expand view

● First Contentful Paint
0.7 s

● Time to Interactive
0.7 s

● Speed Index
0.7 s

● Total Blocking Time
0 ms

● Largest Contentful Paint
0.7 s

● Cumulative Layout Shift
0.002

Captured at Jul 25, 2022, 6:49 PM GMT+1
Initial page load
Emulated Desktop with Lighthouse 9.6.2
Custom throttling
Single page load
Using HeadlessChromium 102.0.5005.115 with lr

View Treemap

Show audits relevant to: All FCP TBT LCP CLS

OPPORTUNITIES

Opportunity	Estimated Savings
■ Eliminate render-blocking resources	0.44 s

These suggestions can help your page load faster. They don't directly affect the Performance score.

DIAGNOSTICS

- ▲ Image elements do not have explicit `width` and `height`
- ■ Serve static assets with an efficient cache policy — 7 resources found
- ○ Avoid chaining critical requests — 2 chains found
- ○ Keep request counts low and transfer sizes small — 11 requests • 173 KiB
- ○ Largest Contentful Paint element — 1 element found
- ○ Avoid large layout shifts — 2 elements found
- ○ Avoid non-composited animations — 2 animated elements found

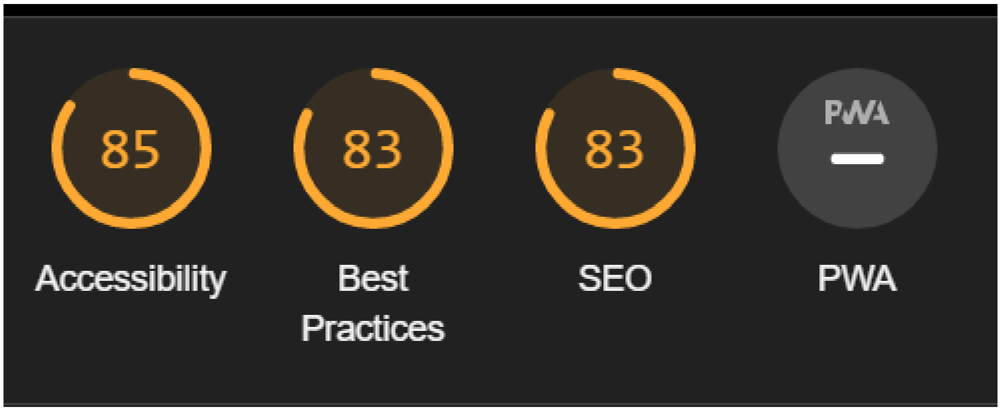
More information about the performance of your application. These numbers don't directly affect the Performance score.

100% "Performance" metric and LCP of 0.7 seconds — this is what I call a quick webpage. The webpage's network payload was reduced **from 2.8 MB to 0.17 MB**: a truly wonderful improvement.

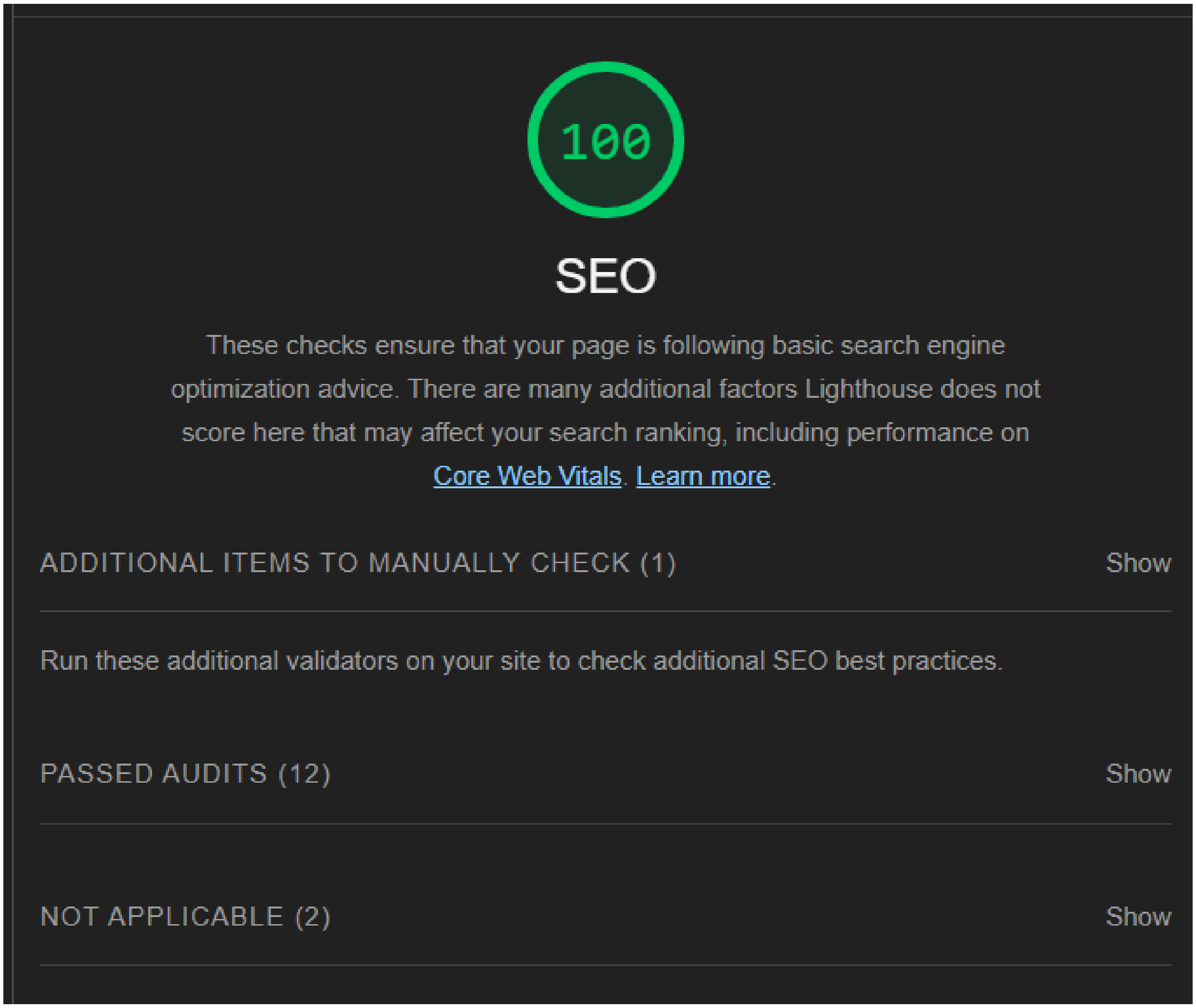
And still, we can improve the performance of the main page even more — for example, we can split the CSS of the page into two files: critical and non-critical. We can extract the critical CSS styles into a separate file, and defer the load of the non-critical code. This will allow us to reduce the render-blocking resources, required by the page to load. But for now, I am more than satisfied with the results of our optimization.

I can surely say that all performance issues of this page have been resolved.

Now, I will focus on SEO and the accessibility of the page. The current metrics are as following:



Right now, the main page has no Meta description, no ALT attributes, at all, and, from my point of view, a poorly-written "title". After writing some good ALTs, a Meta description, and rewriting a title, an SEO score of 100% was achieved:



SEO

These checks ensure that your page is following basic search engine optimization advice. There are many additional factors Lighthouse does not score here that may affect your search ranking, including performance on Core Web Vitals. Learn more.

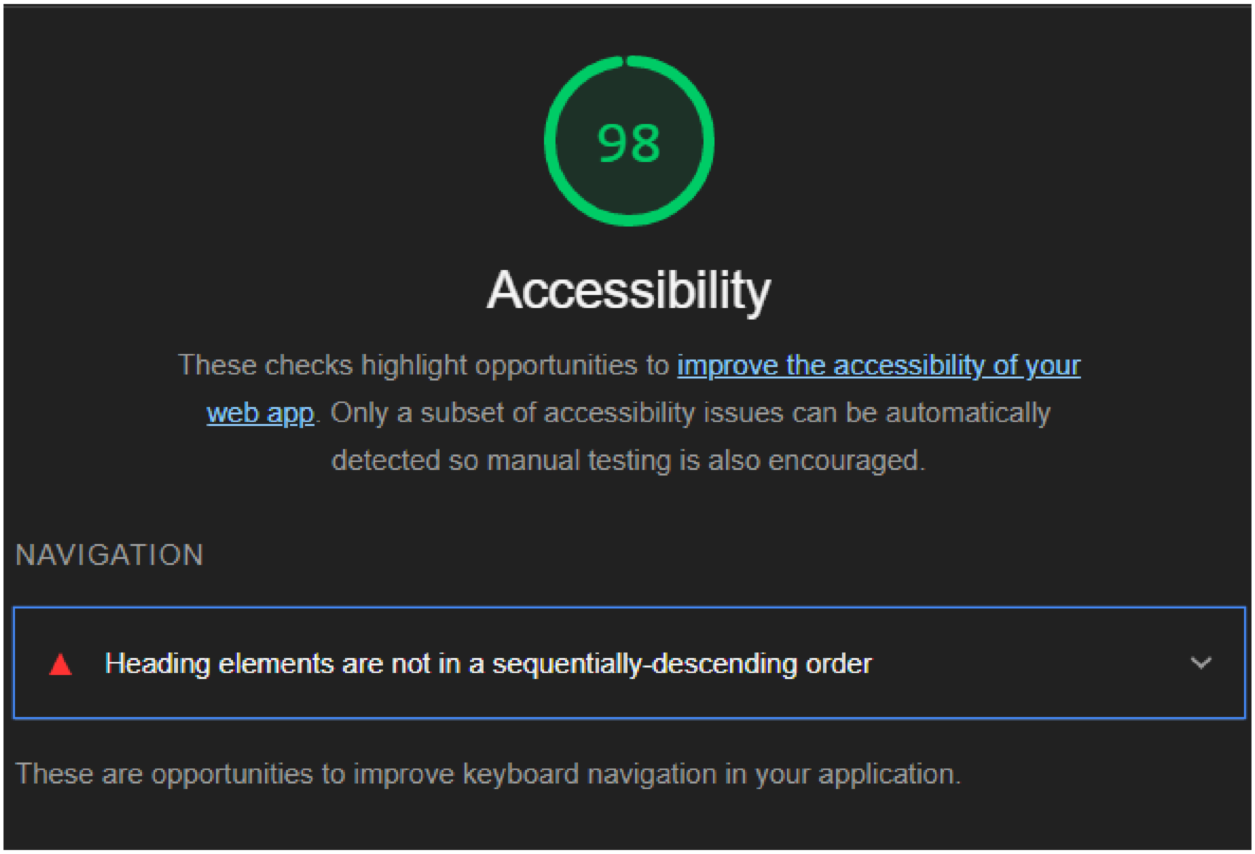
ADDITIONAL ITEMS TO MANUALLY CHECK (1) Show

Run these additional validators on your site to check additional SEO best practices.

PASSED AUDITS (12) Show

NOT APPLICABLE (2) Show

Amazing score!



98

Accessibility

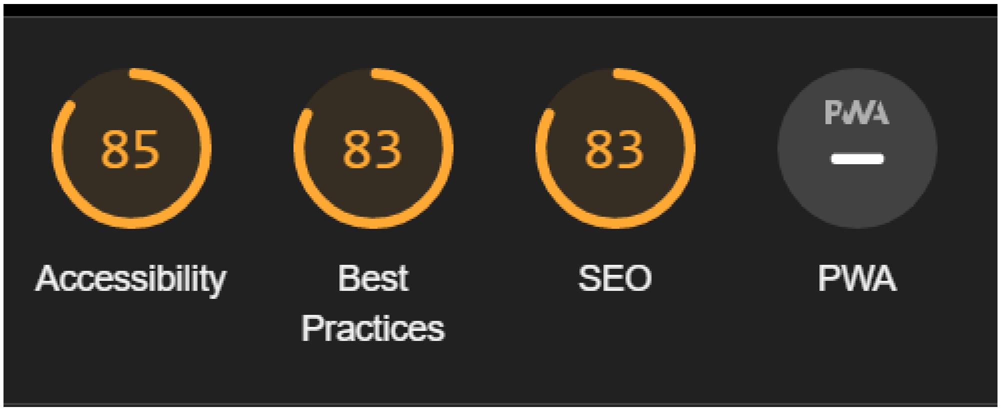
These checks highlight opportunities to improve the accessibility of your web app. Only a subset of accessibility issues can be automatically detected so manual testing is also encouraged.

NAVIGATION

▲ Heading elements are not in a sequentially-descending order

These are opportunities to improve keyboard navigation in your application.

Accessibility is also greatly improved! After all my recommendations and changes, this is how metrics have been changed:

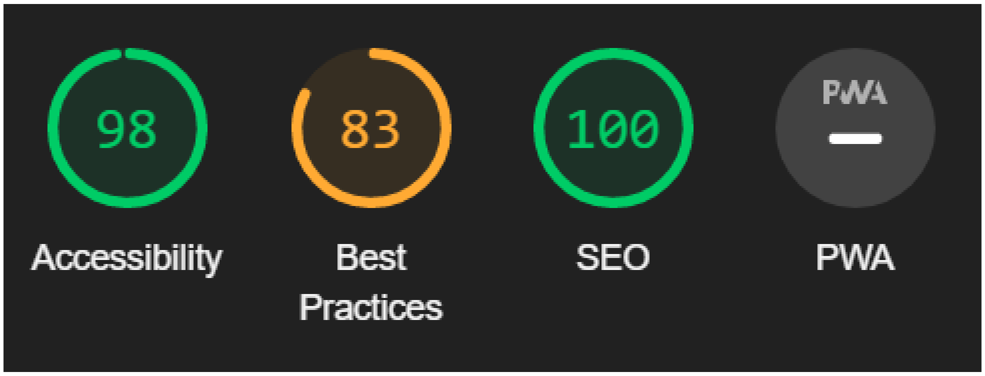


85 Accessibility

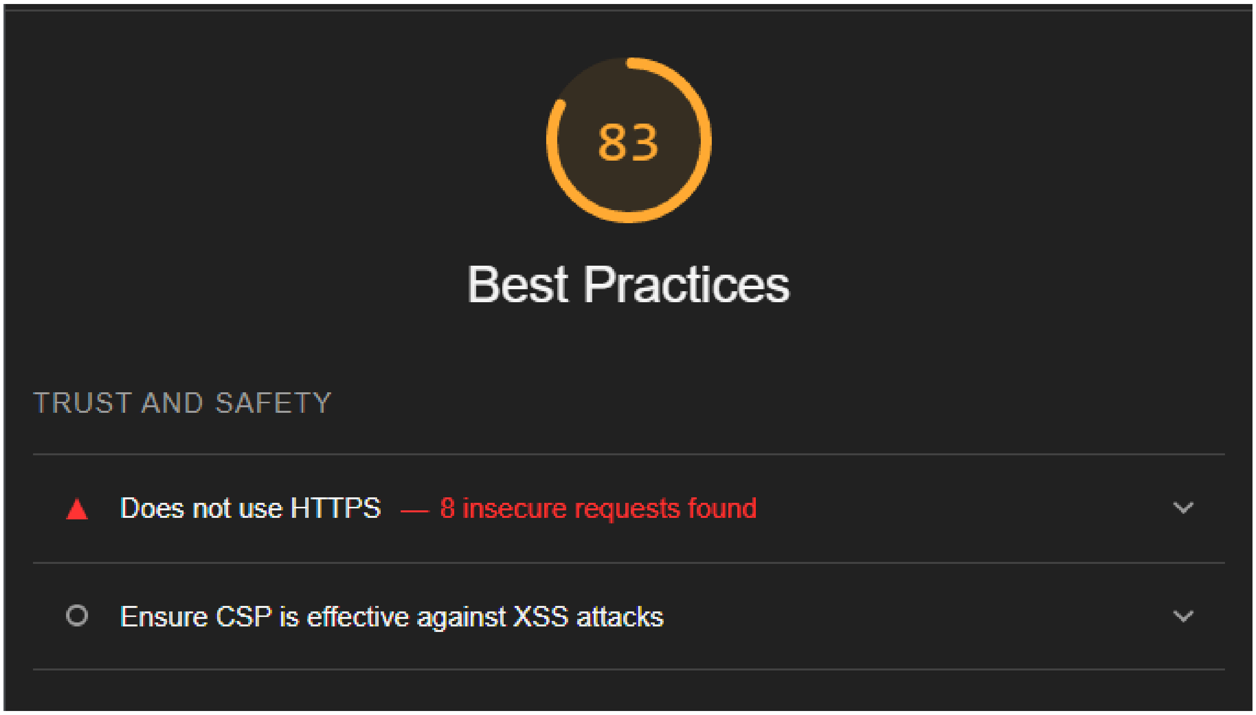
83 Best Practices

83 SEO

PWA — PWA



But, why did “Best Practices” not change its value? Well, right now, the website doesn’t use HTTPS, which is a very significant issue. Developers promised to fix it next month, so for now, I can’t do anything about it. But, using HTTP downgrades the website’s position in SERP, so I always recommend using HTTPS on websites.



TRUST AND SAFETY

▲ Does not use HTTPS — 8 insecure requests found

○ Ensure CSP is effective against XSS attacks

While working on the main page of abtco.us, I achieved amazing results:

Performance: From **77%** to **100%**

SEO: From **83%** to **100%**

Accessibility: From **85%** to **98%**

LCP: from **5.4 seconds to 0.7 seconds**: the webpage became **7.7 times faster!**

Network Payload: From **2.8 MB to 0.17 MB**: **16.5 times lighter!**

In the future, I will continue to work on this and other pages of abtco.us — we will need to add Structured Data and other SEO-related corrections.

Analysis and report by Oleksii Shereta.