Huddersfield Site Performance & Maintainability Report

12th March 2021, Prepared by Adam Bardsley

Work Summary

To evaluate, comment and, where possible, improve the site performance and maintainability, specifically focussing on the mobile experience.

Status after work

No longer of concern

Problem/area	Details	Before	After
Unused and unavailable fonts	Wasted bandwidth, Wasted download time, Incorrect layout	Unused fonts referenced and downloaded	No unused fonts remain and most remaining references are not active
Unlabelled or confusing scripts	Difficulty finding scripts and changing functionality	Unclear naming e.g. javascript	All script/external iframe code elements labelled for simple searching

Significantly improved

Problem/area	Details	Before	After
First display of content on mobile	How quickly a student sees that the website is working at all	7.6secs to first contentful paint	4.6secs to first contentful paint
Longest time to display content	How quickly all visible elements shown	34.9secs to largest contentful paint	19.9secs to largest contentful paint This is still quite long. See recommendation 1 & 2

Time when website is unresponsive on load	How long (cumulatively) during load does the website not react to use actions such as clicking a link	2.91secs	1.05 secs This is a significant improvement but is still quite bad. See recommendation 1 & 2
Unused javascript	Javascript that is loaded but never does anything wasting bandwidth and processor time	10.65secs	12.9secs This has increased because previously some javascript was failing leading to an artificially low score. see recommendation 1,2, & 3

Still needing to be addressed

Problem/area	Details	Before	After
Time till fully interactive	How long before the site work 100% as expected	46.5 secs	34.7 secs This score varies a lot and is still very slow, see recommendation 1 & 2
Images size and loading	Large images displayed smaller still use bandwidth and take longer to reload and processor time to resize	14.4 secs	8.25 secs Whilst a big improvement there are still areas where significant improvement could be made See recommendation 4.
Gifs and adverts	Large images slow your website and can distract	Unchanged	Unchanged These images are part of the carousel at the top and adverts served by OneVoice. Their size and format could be improved. See recommendation 3
Extensive CSS	Large amounts of CSS require large downloads and complicated page rendering that can be slow and processor intensive. Editing is also made harder	1.8 secs	1.3 secs Whilst a small performance cost the l;arge amounts of complicated and unused CSS will slow anyone working on your site which is a greater issue than this small performance issue. See recommendation 1
External JS	Loading 3rd party code can slow your website but also removes control over	Unchanged	Unchanged Some of this JS may be necessary (e.g. related to halo login)

	what that code is doing and can lead to security issues		but much of it is stylistic and out of date. See recommendation 1 & 2
Multiple domain usage and issues	Loading from multiple domains can speed up sites but unless intended it adds complexity unnecessarily	Unchanged	Unchanged See recommendation 2

Other issues and information

Whilst we have made improvements the organisation of the site behind the scenes is still a mess and will cause development slow down going forward. Some scripts appear to only work because others don't and changing one script e.g. menu loading can have impact on other unrelated scripts e.g. group listing

Currently appears to be unused

- http://dev.huddersfield.su/hudpress/aqm/index.php Quality mark system that doesn't load
- https://ta3design.com/HUDSU_API_TOKEN/ Some sort of APIK authentication. Main URL is dead

Not hosted on UnionCloud

- https://www.huddersfieldstudent.com/ Appear to be a what's on system but also loads various elements such as the footer icons, ADVERTISE,AWARDS,JOBS,CONTACT,ENVIRONMENT,PRIVACY

Recommendations

Whilst my previous recommendation for restarting with a blank CSS file and building from scratch is still the most sustainable option the below recommendation are less drastic and would lead to significant improvements

1. Re-work overly complicated elements relying on javascript and complicated CSS

Target specific elements such as the mobile side menu. Remove them and then rebuild. This will remove the duplication and allow you to focus on whether a more basic version could deliver as much value to your students at a lower performance and maintenance cost. Each of these could be tackled individually so site impact would be lower and you would see impact quicker.

Examples of potential targets would be: the menu system, modified login forms, student voice modifications, group listing pages

2. Remove external elements

Currently you access various external resources, remove these one by one and see impact. These resources appear to be unmaintained and broken at the moment. Additionally cookie change to major browsers may start to be flagged as potentially malicious as they load from different websites, a characteristic of many website attacks.

3. Talk to OneVoice about large, slow scripts

Some of the performance elements come from scripts from your provider. They appear to be loaded despite not being used. Currently the system JS from the frontpage is 1.9mb so is a great target for improvement by splitting of code no needed outside of logged in content.

4. Resize All Images

Image for background, such as page headers where larger than required (1920 for a 980px space) and badly compressed (png rather than jpg for a photo). Changing these whilst laborious would speed up multiple pages.