HM Revenue & Customs

Research report

Digital Accessibility Testing 2014/15

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Customer Insight & Knowledge Team

About Chief Digital Information Officer (CDIO)

CDIO Group leads HMRC's journey to become a digital business, in line with the Government Digital Strategy.

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Research requirement (background to the project)

Since 2013, HMRC have carried out a number of customer research projects to inform the design and development of online services using an 'agile' method of development. A key strand of this research had been 'Accessibility Testing'. The purpose of this testing was to ensure that new digital services were being designed with the WCAG 2 AA accessibility standards for customers with disabilities or those who need assisted technology. The testing consisted of a face-to-face task based approach to establish whether the new services worked with different assisted technologies.

As part of ensuring the new digital services we were building in 2014/15 met the WCAG 2 AA accessibility standards, HMRC undertook testing with users who have specific disabilities, particularly those that use assisted technologies to access digital services, such as screen readers, magnification and voice activation.

The research tested whether our online services worked with different assisted technologies and whether the way information was presented and experienced affected comprehension for users with a disability. This ensured that customers accessing our digital services in this way received the same exceptional customer experience as other customers.

When the research took place

The research took place From April 2014 to April 2015.

Who did the work (research agency)

Digital Accessibility Centre (DAC) carried out the research over the year. DAC is a 100% non-profit Social Enterprise, providing high quality, transparent accessibility testing services, aligned to the Web Content Accessibility Guidelines (WCAG 2.0) to AA level. This, in turn, enables them to provide disabled people with sustainable, permanent employment as part of their in-house user testing team, working together with experienced technical auditors in an office environment to produce robust, consistent results.

Method, Data and Tools used, Sample

All testing undertaken by DAC was in line with Web Content Accessibility Guidelines – version 2 (WCAG 2.0) to AA level minimum standard as advocated by the UK Government.

In addition, DAC reported on the overall user experience for disabled people, including those groups who rely on assistive technologies.

Within their team, DAC have the following users, who were utilised for HMRC testing during 2014:

- 2 x screen reader users (Jaws and NVDA)
- 1 x magnification user (ZoomText)
- 2 x voice activation users (Dragon)
- 1 x keyboard user
- 2 x Dyslexic users – both are also colour blind
- 1 x Deaf user with Aspergers (ASD)
- 1 x Deaf user (BSL)
- 1 x user with Learning Disabilities
- 1 x User with Anxiety/Panic disorder
- 1 x Low vision user, using Zoom feature on iPad
- 1 x Blind user using VoiceOver on iPhone

Automated Tools
SortSite - http://www.powermapper.com/download/index.htm

Total Validator - http://www.totalvalidator.com/downloads/TotalValidatorBasic.exe & Web Accessibility Toolbar

Firefox with Firebug - http://getfirebug.com/downloads

Wave toolbar - http://wave.webaim.org & Colour contrast Analyser

W3C Validator - http://validator.w3.org/nu/ & https://html5.validator.nu

Assistive Technology (AT) used
- Dragon Naturally Speaking V10-V13
- Jaws V12-V16
- NVDA 2014
- ZoomText V9.1-V10
- Voiceover (MAC)
- Talkback – Android – native browser
- Voiceover - iOS
- Bluetooth Keyboard

User testing
Users with the following disabilities carried out testing on HMRC digital products throughout 2014
- Colour blind/Dyslexia
- Aspergers
- Deaf
- Blind
- Low vision
- Mobility impaired user (using keyboard only and Voice Activation)
- Learning difficulties
- Anxiety/Panic Disorder

Browsers
A variety of browsers were used and they are listed below

Desktop
- Internet Explorer 8/9/10/11
- Chrome - latest version at time of testing
- Firefox - latest version at time of testing
- Safari (MAC) - latest version at time of testing

Mobile
- iOS 7+
- Android 4.1 - 4.4

Main Findings

During the course of 2014, DAC tested the following four services:
- Charities online
- Friends and Family
- R38 iForm
- Tax Summaries

The DAC team reported issues that affected them due to their disabilities. Some issues were common throughout the services tested. They were:
- Unlabelled forms
- Non-descriptive links
- Inability to tab onto certain elements using keyboard alone
- Heading hierarchy issues
- Colour contrast issues

Further detail has been provided below for each of the services tested.

R38 iForm

The DAC user/technical team carried out an accessibility audit for HMRC R38 website on 17th December 2014.

The main issue for users were related to forms and links. In particular, the labelling of some areas for screen reader users were quite problematic as non-existent ID's were referenced which could cause an issue for certain screen-reading software. Radio buttons were used to make selections whereby no surrounding description were given, this would have benefited from a fieldset and legend on 'Yes' and 'No' radio buttons, making them more meaningful for the users.

Link descriptions were also an issue for screen readers, particularly on the summary page, where many links titled 'change this' were found. As there were so many duplicated links, users struggled to identify which link they had to change.

The structure of headings was also an issue as there was no hierarchical and logical structure provided, which affected screen reader users when navigating areas of the page.

Strangely, there was a lack of a visible skip link when tabbed to on the page. This allowed certain users to navigate directly to the main content on each page. DAC realised this was out of scope of the testing but felt they should flag the issue.

Mobility impaired users found certain sections very confusing. This was due to two main areas when tabbing to content, primarily radio buttons and links. There were two areas on each page which had not been given a tabindex and this forced keyboard users to focus on

elements that were not actually actionable elements. Instead, the tabindex focus was on the heading structure, which confused users.

Colour blind and low vision users also struggled to identify some links and had trouble locating the radio buttons precisely due to the contrasting colours. In general, the lighter grey appearance on some areas was troublesome for many user groups, as they had to concentrate harder when focussing on content.

The mobile findings were somewhat varied, with similar issues between desktop and mobile in certain criteria such as colour contrast and form issues. The summary page used tables for layout, which caused an issue for some users, as some content appeared off-screen.

Tax Summaries

The DAC user/technical team carried out an accessibility audit for HMRC Tax Summaries website on 12th December 2014.

DAC's Deaf and Hard of Hearing analysts, Panic/Anxiety and Asperger's analysts did not encounter any issues whilst auditing the HMRC Tax Summaries website. Deaf or hard of hearing users are usually affected by content that is available in the form of video where captions have not been provided; content that affects this user group was not encountered.

Users that experience panic and/or anxiety are often affected by updating content or unexpected changes occurring whilst performing tasks such as filling out a form or page refreshing, however DAC's analysts encountered no such instances. Users that live with Asperger's often encounter issues in relation to content layout and logical navigation structure. The site provided a clean, uncluttered environment that did not distract the user with moving text, animated images or flash, which can result in information overload for people with Autism and Asperger syndrome.

The main issue encountered was in relation to the page that displayed a graph and a link to an accessible alternative; the way in which the 'hidden' setting had been implemented resulted in the graph and the link being inaccessible to all screen reader users on both desktop and mobile in all browsers.

There were no page titles present on any of the pages tested, which are often relied upon by screen reader users to determine the context of the page and to clarify that when a link has been selected, the appropriate page was displayed. Headings also caused some issues for screen reader users that navigate with JAWS, (although this seems to be a shortfall of JAWS and html5). This can be overcome using WAI-*ARIA* (Web Accessibility Initiative - *Accessible Rich Internet Applications*) which will ensure that headings are displayed in the same logical order as they are for VoiceOver and NVDA users.

There was an instance where the colour contrast of grey text against a white background failed the expected ratio and proved difficult to read for DAC's low vision and colour blind analyst.

The only issues encountered on the 'Error' pages were in relation to the heading structure mentioned earlier. All other users found these pages to be accessible.

Friends and Family

The DAC user/technical team carried out an accessibility audit for HMRC's Friends and Family website on 16th October 2014.

The overall level of accessibility was good but some issues were encountered that caused certain users difficulty. These include a table that was present on the login page that did not have a caption preceding it, which these help screen reader users to understand the context of the information within the table.

Although the header and footer elements were out of scope for this audit, DAC thought it important to highlight that the skip feature did not work as expected; this is an important navigational tool for screen reader and keyboard only users and is required to skip the users focus to the main content. The link did however become visible and clearly highlighted when it received focus, which was effective.

Keyboard users were not able to access some items because they could not be tabbed onto. This meant that the keyboard user was unable to complete the second and third journey because they were reliant on links that appeared when an item was selected. Some elements were not available for voice activation users due to the way in which they had been marked up.

Links were also present that required more description as their purpose was not clear. Adding some additional text that can be hidden off screen would ensure that screen reader users were aware of the link purpose. This was also the case for a form field on the login page, where an un-labelled text box was encountered, again not offering enough information for a screen reader user.

Charities

The DAC user/technical team carried out an accessibility audit for HMRC Charities Registration website on 5th November 2014.

During the course of the testing, a number of issues were found that would affect the accessibility of the application. The most problematic of these were for screen reader users when navigating forms, as some appeared to be un-labelled or not descriptively labelled enough.

Issues were found when navigating by headings, which is one of the main ways screen readers move quickly to content. There were areas where headings had been styled using CSS to look like headings. However, these were not identified using screen reader technologies.

Tables were used for visual formatting of content where they should not have been used. Best practice is to use HTML to mark up content and CSS for layout and positioning. Using tables for layout purposes can cause issues. There were also areas where tables had been used without a descriptive table summary or caption to introduce the table's contents.

Mobility-impaired users, who relied on voice activation technology to navigate, were confused in certain areas. This is because elements were visually styled to resemble links instead of buttons for actionable areas