

GMHC Palliative Care – Grey Matters

Introduction

GreyMatters Healthcare (GMHC) developed a Palliative Care IT system to be used by both patients and carers. The functionality will primarily facilitate communication between patients and carers, administration of carers' appointments and records, and patients recording details about themselves. see:detail was commissioned to perform Functional, Usability and Accessibility testing on the prototype prior to deployment to stakeholders.

Test Methodology

see:detail adopts the Website Accessibility Conformance Evaluation Methodology as documented by W3C (<http://www.w3.org/WAI/eval/conformance.html>)

What we did

Test Design

The test approach used was heavily based on checking requirements one by one, instead of attempting to devise test processes that cover multiple requirements. Therefore, the standard test process was to examine the screens one at a time, and test all the functional requirements sequentially. Any parts of the website that were not expressly covered in the functional specification were ignored, even if there appeared to be working fields.

Functional Testing

The most important function was that the links between pages work (including navigation from the login screen). In both cases these functions almost worked perfectly.

A total of 14 issues/defects were recorded

In view of the simplicity of the prototype and the small number of defects, the normal full range of severity was not used. Instead, two defects were marked as critical (where entire functions were missing) and the rest were marked as major. The full list of defects was included in see:detail's JIRA database.

Accessibility Testing

The prototype website was tested against the WCAG 2.0, a standardised set out guidelines for usability. The test themselves were a standard set of tests developed by see:detail and checked against these guidelines. One difference from a typical test was that this is a prototype site, rather than a working site. As a result, some tests could not be performed as the function does not yet exist (e.g. all standards based on validation error messages, as the submit buttons are not yet functional). The testing has taken this into account and distinguished between those criteria that should already be in place in the prototype, and those that would only need to be covered later (and therefore care will need to be taken to ensure that they are included in the design of the live system). Overall, this is a semantic website but requires improvement in some areas of code and design.

The coding issues include standards compliance for HTML5 and adding semantic elements such as fieldset, legend and label. The heading structure should be easy to adjust. Many of the issues affect the forms which are a prototype issue only.

Usability Testing

As well as formalised functional and accessibility testing, see:detail carried out informal usability testing. This involved noting any potential issues with usability during the aforementioned tests. One major limitation of this type of testing is that all see:detail testers are experienced users of IT, whilst it was expected that many users of this website will have little IT experience. see:detail testers can only speculate over which functions other users may have trouble with. To do this, more formal usability testing was recommended involving people without IT backgrounds.

Conclusion

Summary of Functional Testing:

Overall, the prototype did fulfil a purpose of demonstrating to stakeholders of what the website would look like. However, there were many deviations from requirements in the system, mostly missing functionality.

see:detail had a concern on how Identity and Access Management would be addressed in the functional specification. The specification did highlight that two-factor authentication would be applied but not how this will be achieved. This issue will obviously be critical to the success of the system.

Summary of Accessibility Testing:

As a mostly text-based website, this prototype avoids some of the worst design features that can render content completely inaccessible to users if care is not taken (e.g. video context without transcripts/captions, text shown only on images, some flash-based content). Unfortunately, however, problems were noted which currently prevent WCAG certification at any level and would present a number of problems for people with disabilities.

In addition, there are further aspects that would need attention when features are added into the system, such as validation of error messages. The add calendar item screen would currently fail at it is a placeholder image; it is assumed that this format will not be used in a live system. It is recommended that the issues are addressed early before they are copied into new pages. However, if these issues are corrected and these standards are followed in the rest of the design, it should be realistic for the site to comply to level A or even level AA. see:detail recorded all issues for the client.

Summary of Usability Testing:

In summary, there no concerns with usability of working features already in the prototype, but recommendations were made to extend the scope of the usability testing to include a sample of actual users.

Recommendations

As this system was only a prototype intended to illustrate how such a website would look, see:detail was primarily concerned with whether it would be fit for purpose as a prototype. At present, despite the omissions of functionality, the website was fulfilling this purpose.

It is not suitable at this stage for any sort of beta release to the public, but see:detail understands that is not the intended use of the prototype.

However, we recommend that the missing functionality should still be added to the system prior to prototype deployment. Although functions such as character limits in fields and selectable buttons are not strictly necessary for an illustrative prototype of this nature, most or all of the missing functions should be reasonably easy to add in a brief period of time.

Looking further on from prototype deployment, we recommend that attention is given to accessibility and usability as early as possible. Most of the problems highlighted in the accessibility tests would be easy to resolve now but harder to resolve later. Items such as forms without proper form labels and images without alternative text are better corrected early before they are copied to other pages and necessitate more laborious corrections.

Regarding usability, although we have no immediate concerns with the working functionality in the prototype, we highly recommend that some sort of lab testing is carried out sooner, if it has not been done already.

Since security and approved access to highly sensitive personal information was paramount to the success of the system then it was strongly recommended that the Identity and Access Management environment the system will operate under is documented in detail.

Overall, this is a semantic website but requires improvement in some areas of code and design. The coding issues include standards compliance for HTML5 and also adding semantic elements such as field set, legend and label. The heading structure should be easy to adjust. Many of the issues affect the forms which are a prototype issue only.

It does not pass WCAG at the moment. The biggest obstacle of design which affects compliance appears to be the colour contrast issues. There are many instances of grey text on grey buttons, and other brightly coloured links on white. Although these appear attractive to sighted people, they may present issues for those with sight problems. see:detail believes that the website could achieve A or even AA criteria if Grey Matters are willing to alter the design and code.

In conclusion, see:detail believes this system was currently suitable for deployment for purposes as a prototype (but no more), but it would be prudent to add the missing functionality beforehand. Accessibility also needs improvement, but the biggest challenge is likely to be usability considerations in subsequent design of features.

see:detail is the trading name for the Independent Software Testing company Autism Works Ltd. Autism Works is a Social Enterprise, which takes positive action to employ people with an autism spectrum condition (ASC) or Asperger's Syndrome in the field of software testing.

Autism Works is a not-for-profit trading subsidiary of the Sunderland charity, Education and Services for People with Autism (ESPA). We recognise that the skills and talents of people with autism can be a commercial asset in the software testing industry.

Our specialists test software for the web, mobile platforms and client/server. We test deeper, faster, better, minimising risk with the benefit of fresh perspective which only independence can bring.

What sets see:detail apart?

Our employees are persistent, methodical, focused and pay acute attention to detail. They have innate curiosity, determination and a huge amount of integrity.

see:detail takes positive action to employ people with an autism spectrum condition or Asperger's syndrome. The world has benefited from the unique thinking of Isaac Newton, Charles Darwin, Albert Einstein and Alan Turing - who are all thought to have had Asperger's syndrome. This is not a disability, but a different ability.

We are a social enterprise that values 'outside the box' thinking and the positive traits of autism and Asperger's Syndrome. Autism spectrum conditions have lifetime consequences with a range of impacts on health, economic well-being, social inclusion and quality of life of individuals with the condition, their families and the rest of society. There are approximately 540,000 people with ASCs in the UK, of whom 433,000 are adults and 107,000 are children.

- The aggregate cost of supporting people with ASCs in the UK is £27.5 billion annually. Of this, 59% is accounted for by services, 36% by lost employment for the individual with an ASC, their families and other carers, and the remainder by family expenses.
- The lifetime cost for someone with an ASC and a learning disability is estimated to be £4.7 million and £2.9 million for someone with a high-functioning ASC.
- Average annual costs for an adult with high-functioning ASC range from £32,681 to £87,299

We use this information as our basis for calculating tangible social value. This information has been gathered and research by the National Audit Office in 2009.

The Autism Act 2009 was a landmark piece of legislation (the first ever disability-specific legislation passed in the UK) which focussed on improving society's awareness of the condition, training our front line public services staff, from teachers to nurses to job centre workers, to recognise and be able to deal more confidently when dealing with the special needs of 1 in 100 people in our society. Despite these improvements, employment remains at an intolerable level of only 15%. People with autism are some of the most disadvantaged people in our society. Their condition can be hidden; they suffer unacceptable levels of misunderstanding and bullying, and frequently live their lives in isolation, with the dreadful consequences of developing further mental health issues. At least one in three adults with autism are experiencing severe mental health difficulties, sometimes leading to suicide.

Yet this need not be the case. Some people with autism possess extraordinary skills. Common traits of the condition like attention to detail, a joy of repetition, rote memory, persistence, and a curious mind are essential skills for the critical role of software testing. Most want to work and feel a sense of contribution to society, freed from a life of disillusion and state benefits.

Autism Works turns perceived negative disabilities into positive activity which supports employment, the "Digital" economy and business growth.

When commissioning Autism Works to carry out testing work, Newcastle University will help deliver a minimum social value of £148 per day, based on National Audit Office findings June 2009, reducing dependency on the state and bringing self-respect and a positive future to our employees.

Our Test Services

Regression, Automated and Manual Functional, Usability, Accessibility, Compatibility and Exploratory. Our Test Analysts are BCS/ISTQB qualified and can work with a range of tools, in particular, Selenium.

The Benefits

Unbiased objective testing, no conflicting loyalties, reduced costs, allowing focus to be on your developers doing what they do best, delivering a higher quality and more reliable product to market.

see:detail is the trading name of Autism Works Limited, a Social Enterprise that offers the opportunity of sustainable employment to people with an autism spectrum condition or Asperger's Syndrome in the field of software testing. More information can be found at:

- www.seedetail.co.uk
- www.autismworks.co.uk