

Usability testing the *Letters of 1916* Digital Edition

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Abstract

- **Purpose & Methodology:** This paper describes the process of usability testing a prototype version of the *Letters of 1916* Digital Edition. It discusses lessons learned and how the results of the testing were used to inform the subsequent redesign of the site.
- **Findings:** Results imply that a majority of users, even digital humanists, were not looking for a unique and specialised interface, but assumed - and preferred - a user experience that reflects common search systems. Although the audience for digital humanities sites is becoming increasingly diverse, the needs of the different user groups may be more similar than had previously been assumed.
- **Research limitations:** The usability test employed eleven participants, five of whom were coded as "general public". Four of this five had previously volunteered to transcribe and upload letters. This meant that they were already familiar with the project and with the *Letters of 1916* Transcription Desk. However, their prior involvement was a result of their genuine interest in the site, thus ensuring that their interactions during testing were more realistic.
- **Practical implications:** Lesson learned may be useful for the digital editions of future crowdsourced humanities projects.
- **Originality/value:** *Letters of 1916* is the first crowdsourced humanities project in Ireland. The theme of the project is topical, emotive and socially important in Ireland and among Irish diaspora today. The project's content has been created by the "ordinary citizens of Ireland" and they are likely to be the major users of the Digital

Edition. The study explores how the Digital Edition can support these users, while also facilitating the range of traditional scholars and digital humanities researchers.

Keywords: usability testing, digital humanities, crowdsourcing, user studies, digital libraries, qualitative research

Article classification: Research paper

1 Introduction

Letters of 1916 [1] is the first crowdsourced humanities project in Ireland. It seeks to illustrate everyday life in Ireland in 1916 through the examination of correspondence, both public and private, across a broad range of topics: from the Easter Rising, the Great War and politics, to family matters, love letters and business correspondence (McGarry and Schreibman, 2015). The project was launched with a public-facing transcription desk in September 2013. In March 2016, a digital scholarly edition of the collected and transcribed letters was launched [1]. In order to ensure that it met the goals of its users, a usability study of an early working prototype of the Digital Edition was conducted in July 2015. Via usability testing, the study explored the user response to the site, particularly to the search and navigation functionalities and the presentation of individual letters. This paper describes the process of usability testing and discusses how lessons learned from the testing were used to inform the subsequent redesign of the site.

2 Research question

The research question that the usability testing sought to answer was whether the *Letters of 1916* Digital Edition met the goals of its main user groups. The *Letters of 1916* project team identified these user groups as "the general public with a general interest in Irish history during the Great War period", digital humanists and traditional academics (McGarry, 2015). The main goals of these users were identified as the ability to:

- Search and browse for letters.
- View and work with a chosen letter. This would include understanding how to access a letter's related media and metadata and, in the case of academics, how to cite a letter.

- Understand and be able to navigate the site's organisation, including its relationship with the *Letters of 1916* Transcription Desk.

The theme of the *Letters of 1916* project is topical, emotive and socially important in Ireland and among Irish diaspora today. The project's content has been created by the "ordinary citizens of Ireland". These members of the general public have a strong feeling of ownership of the project and are likely to be the major users of the Digital Edition. These same citizens vary widely in their technical prowess and cover a wide age-range, with many in an older (retired) age bracket. The usability study was an opportunity to gain insights into how the site could facilitate these "ordinary citizens", whilst also facilitating the range of traditional scholars and digital humanities researchers.

3 Literature review

3.1 Crowdsourcing in the humanities

Crowdsourcing (Holley, 2010) is "the process of leveraging public participation in or contributions to projects and activities" (Dunne and Hedges, 2012). In relation to the humanities, public participation may take many forms, for example the transcription of handwritten texts, the tagging of photographs, entry of metadata or commentary on content (Dunne and Hedges, 2012). Examples of crowdsourcing in the humanities include the University of Oxford *Great War Archive*, in which participants were invited to upload digital surrogates of materials relating to their own family history of World War One (Lee and Lindsay, 2009). Other humanities crowdsourcing projects include *Old Weather* [2] and *Transcribe Bentham* [3], both of which involve volunteer transcription. In the case of the Old Weather project, photographs of thousands of ships' logbooks are being transcribed and analysed. The aim of *Transcribe Bentham* is to create TEI¹-encoded transcription text for 12,500 Jeremy Bentham folios (Moyle et al, 2011).

Research into crowdsourcing motivations indicate that highly active contributors have "both personal and extrinsic motivations; that they do it both for themselves and for others" but that, often, the dominant motivation relates directly to the project's subject area (Dunne and Hedges, 2012). Open-access to the knowledge created via crowdsourcing, allowing volunteers to share their work with friends or colleagues, "can

¹ Text Encoding Initiative [4]

give a great level of satisfaction to the volunteer, and forms part of a project's reward structure" (Dunne and Hedges, 2012).

3.2 User groups

Walsh *et al.* (2016) note that cultural heritage services are increasingly being tailored to individuals and groups but that there is disagreement as to how to categorise users. For example, it is not clear exactly what users fall into the category of the "general public".

They also point out that, within groups, users and user characteristics can vary considerably and that "roles can change over time depending on age, personal / social circumstances and motivations, as well as users' relationship with technology".

Russell-Rose and Tate (2013) focus on two main differences between users: domain expertise, which includes familiarity with the subject of the service or site, and technical expertise, which includes familiarity with technology and search systems.

In relation to the latter, there is evidence of a reduced aptitude for learning new technologies in older age groups, although the literature does not consistently define the concept of the "older adult" (Chevalier, 2015). When searching for information on the web using Google, older (60-68 years) participants have been found to formulate fewer queries, use fewer keywords and find fewer correct answers than younger participants. Further, older people find it more difficult to modify unsuccessful search strategies and to extricate themselves from search impasses (Chevalier, 2015). A lack of interest is the most commonly identified reason for older adults not adopting technology; they tend to be less interested in "adopting technology, simply for the sake of adopting technology" than younger users (Hanson, 2011).

3.3 Searching humanities resources

Clough *et al.* (2015) comment that tools to allow access to digital cultural heritage have traditionally focused on supporting "subject specialists and experienced users" but that this is changing as institutions attempt to make collections "accessible and appealing" to a wider audience of non-domain specialists. However, there appears to be more than one school of thought as to what these different groups actually need. This is epitomised by Wessels *et al.* (2015), who identify two main approaches to the digitisation of humanities sources:

- Via "discrete research projects", which can result in resources that provide individualistically configured search features, thus "potentially restricting the resource's usability for a wider range of users".
- Via "large-scale digitisation programmes" that tend to focus on "making access to the resource through search much easier for a wide range of users, at the expense of the precision and sophistication of search that is sometimes needed for discipline-specific research questions".

This implies that humanities scholars require specialised search interfaces. This is supported by Clough (2015) and Wilson (2010), who suggest that keyword search is insufficient to support access to cultural heritage. However, Kemman *et al.* (2013) report that, when humanities scholars search for information online, the use of general search systems, such as Google and JSTOR, is the dominant approach, with Google as the "key player" and keyword search as the dominant search strategy. Where a collection has its own specific search interface, scholars expect a simple search box that functions in the same way as Google search (Kemman *et al.*, 2013). Warwick (2012) suggests that this is partly "because it works" and, also, because most users, particularly humanities academic users, regard training in the use of digital resources as "a waste of time". Unsurprisingly, it has been found that many digital natives also favour the "most commonly used interfaces and functionalities of popular search engines" when accessing cultural heritage (Nicholas *et al.*, 2013). However, Warwick (2012) suggests a lack of sophisticated information literacy affects even this group. Students trained in information seeking, she suggests, "will give up as soon as they have a minimal level of information to complete a task", rather than "conducting more complex searches to find a more complete result set".

Bates (2013) comments that, increasingly, the advanced search feature in search engines is being "buried or hidden entirely". As early as 2006, Nielsen and Loranger were recommending that an advanced search feature should either only be displayed when requested or, alternatively, should be avoided altogether, as few users used it correctly. Numerous studies support this advice by demonstrating that most people never use an advanced search function (Rieger, 2009).

Professional searchers, such as librarians, may be among the minority for whom the side-lining of advanced search is a frustration (Bates, 2013). But Kemman *et al.* (2013) imply that humanities scholars are not among this minority, in view of the fact that they rarely use advanced search options.

The move away from the provision of advanced search options is paralleled by a move towards the provision of "post-search-faceted navigation options" (Notess 2015). Using this approach, an initial search is carried out using a simple search box; the results may then be filtered by choosing from a list of facets.

Google introduced auto-completion of search terms as early as 2004 (Marrs, 2015). As of 2016, search engine users increasingly expect this feature, or at least are not surprised by it. A related but distinct concept is auto-search, or streaming search results (Wusteman and O'hiceadha, 2006; Wusteman, 2009), whereupon search results begin to be displayed while search terms are being entered. This feature is less widespread, although Google have experimented with its use since 2010, for example, in the form of Google Instant (Marrs, 2015).

3.3.1 *Mobile first* design

The *mobile first* design strategy refers to an approach in which the online experience of websites and apps is designed initially for mobile phones (Graham, 2012). The online experience for traditional desktop and laptop computers is then influenced by the mobile design.

The rise in popularity of the *mobile first* approach has resulted in an increase in the use of icons without accompanying text labels. However, Reiss (2012) states that icons are "pretty poor communicators". He identifies only four icons that, as of 2012, were recognised by the majority of users: the magnifying glass (representing the search function), house (home), envelope (contact/mail) and printer (print). Thus, icons should be employed with caution and should use metaphors that readily generate, for the user, "a strong series of connections to past experiences from the real world or from a previous cyberspace encounter" (Tognazzini, 2014). Reiss (2012) stresses users' dependence on "retroductive inference" in interpreting icon behaviour: an icon that is similar to one that a user has previously seen on other websites is expected to have the same function and behave in the same way. If this expectation is frustrated, visitors will be surprised and annoyed. Reiss (2012) suggests that, if icons are used, they should be those that are used in the most common systems, such as Microsoft, Apple, or Google. The addition of text labels improves the usability of icons (Lidwell *et al.*, 2010; Bedford, 2014). Sherwin (2014) suggests that labels should still be used for newer icons, such as the three-line menu icon, also known as the hamburger icon.

A specific example of the influence of *mobile first* is the increased use of the hamburger icon combined with a hidden global menu. However, this approach has been identified as reducing the usability of sites on displays larger than a mobile screen (Pernice & Budiu

2016). Recent studies suggest that "discoverability is cut almost in half by hiding a website's main navigation" but that degradation of user experience and navigation is greater on desktop displays than on mobiles (Pernice & Budiu 2016). It is proposed that, rather than take a *mobile first* approach, interfaces should be optimised for each device (Pernice & Budiu 2016).

3.4 Usability testing

Until recent years, the study of users of digital humanities sites and products was unusual (Gibbs and Owen, 2012; Schreibman and Hanlon, 2010). It was widely assumed that humanities scholars did not have the technical expertise to know what they needed from a resource (Warwick, 2012). However, more recently, the importance of usability testing of digital humanities sites has been highlighted (Ridge, 2015).

Usability testing involves representative users performing a series of representative tasks in the presence of a tester (Notess, 2005). Asking users to think out loud about the tasks they are performing is generally found to be the most productive approach. Alternatively, users may be asked to discuss the process after the tests are finished. Usability testing makes most sense as part of an iterative design process, as epitomised by Agile software development methods (Sy, 2007; Norberg *et al.*, 2005). Testing early and regularly, and responding to feedback, are all key Agile design principles. Sonderegger *et al.* (2015) report that older adult users (52–79 years) find usability testing more stressful than do younger users, and are more likely to feel that it is their fault if they experience problems achieving the goals of the usability test scenarios. It is, therefore, particularly important to reassure older test participants, prior to their involvement, that it is the technology, and not the participants, that is being tested.

4 Digital Edition prototype

Figure 1 illustrates the prototype *Letters of 1916* homepage as of July 2015. This page provided access to the Digital Edition, as well as to other aspects of the project including the Transcription Desk. Until shortly before testing began, the focus of the Digital Edition phase of the project had been on the content, search pages and site navigation. Thus, the homepage was an early-stage mock-up, and its design was not a main focus of the testing. The burger icon in the top left of the screen hid the global menu. Selecting the item labelled *Search* from this menu took users to the search page shown in Figure 2. As illustrated in this figure, before any search was performed, the search page displayed metadata relating to

letters available on the site. The aim of this listing was to provide users with a method of browsing the collection and of gaining some idea of the materials available.



Figure 1: Prototype *Letters of 1916* homepage

4.1 The Search process

As can be seen in Figure 2, initial search options comprised

- A drop-down list of categories.
- A calendar facility, entitled *Sent between*, for the selection of a range of dates within the period covered by letters in the collection, namely November 1915 to December 1916 inclusive.
- A *Text* box for entry of search terms from the body of the letter.

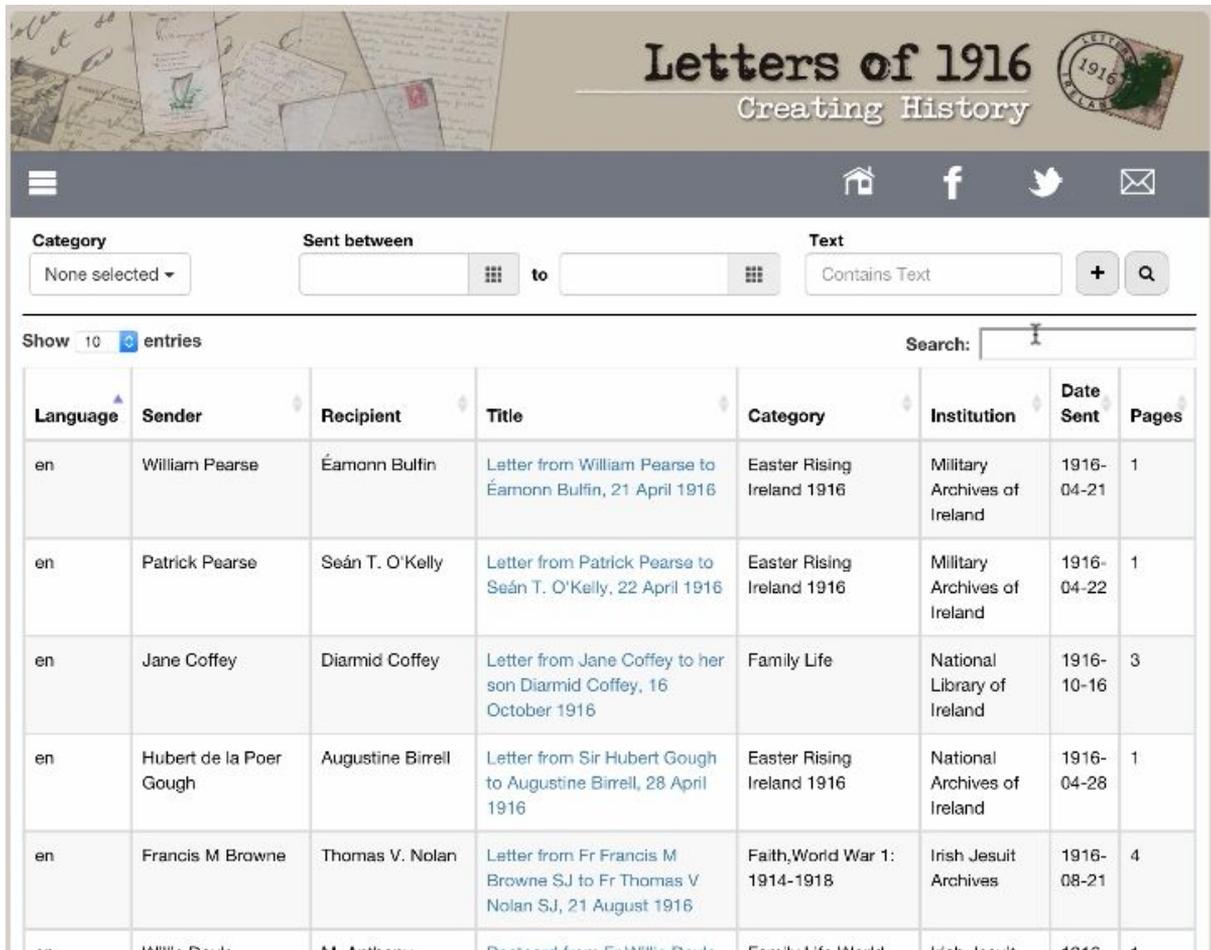


Figure 2: Prototype Letters of 1916 Digital Edition Search page

A *Search* box was situated below the *Text* box. It was intended that only the *Text* box would be available in the final system. However, as the *Text* box was not yet functioning at the time of the usability tests, the *Search* box was made available; its function was the same as the intended function of the *Text* box. This was explained to the participants. They were asked to complete each scenario assuming that only the *Text* box was available. Once they had demonstrated this (but obtained no results), they were asked to repeat the process using the *Search* box. This was a research limitation, as it added to the participants' initial confusion concerning the search interface. However, the participants soon became familiar with this process, and it was largely possible to distinguish this aspect of dissatisfaction with the search interface from other concerns when analysing the results.

The search process was initiated by clicking on the magnifying glass icon (to the right of the *Text* box, beyond the "+" icon). In addition to this, auto-search was initiated as soon as a character was entered in the search box.

Further search functionality was available by clicking on the "+" icon, which resulted in the appearance of the drop-down menu illustrated in Figure 3. When one of the five items was selected from this menu, a new search option would appear below the existing search options. Figure 4 illustrates the search interface once search options *Collection*, *Type*², *Language* and *Sent From* had been selected, and items had been chosen from each of these options.



Figure 3: Section of search page illustrating further search functionality available by clicking on the "+" icon

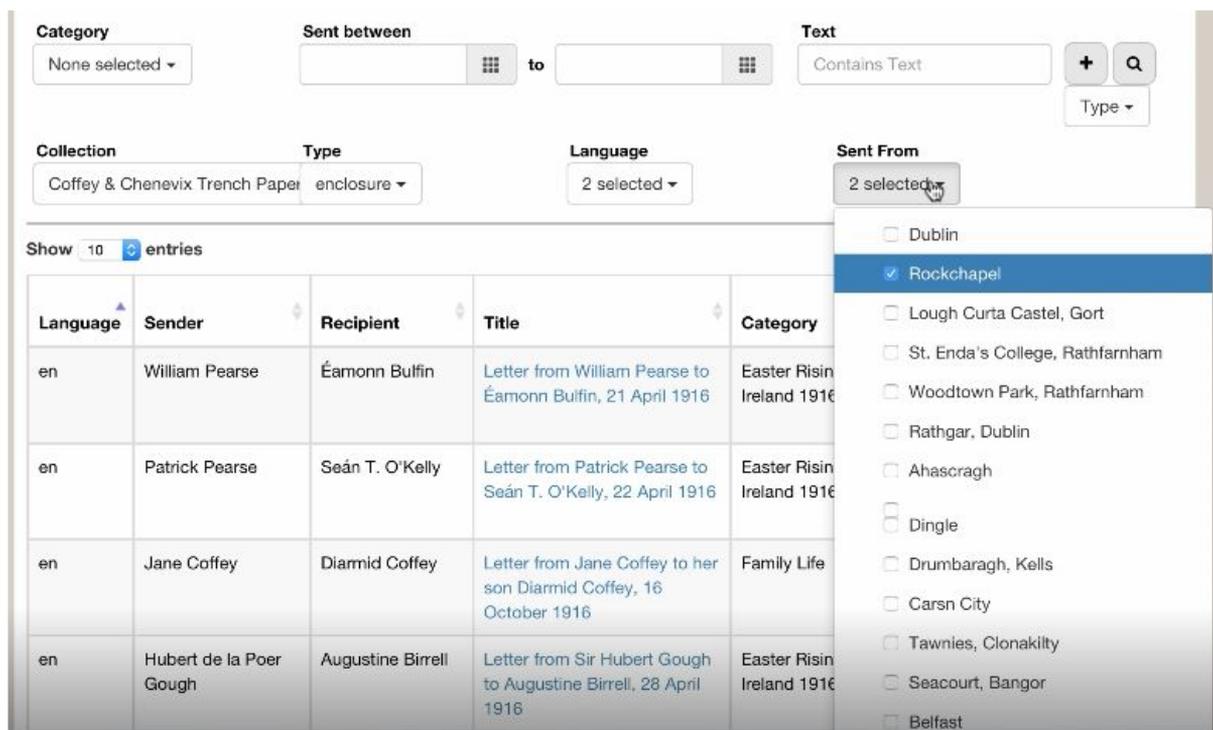


Figure 4: Prototype Letters of 1916 Digital Edition Search page after search options *Collection*, *Type*, *Language* and *Sent From* have been selected from the "+" menu, and items have been selected from each of the resulting menus

² "Type" refers to the form of correspondence and, at the time of testing, could have the value *Letter*, *Enclosure* or *Correspondence*.

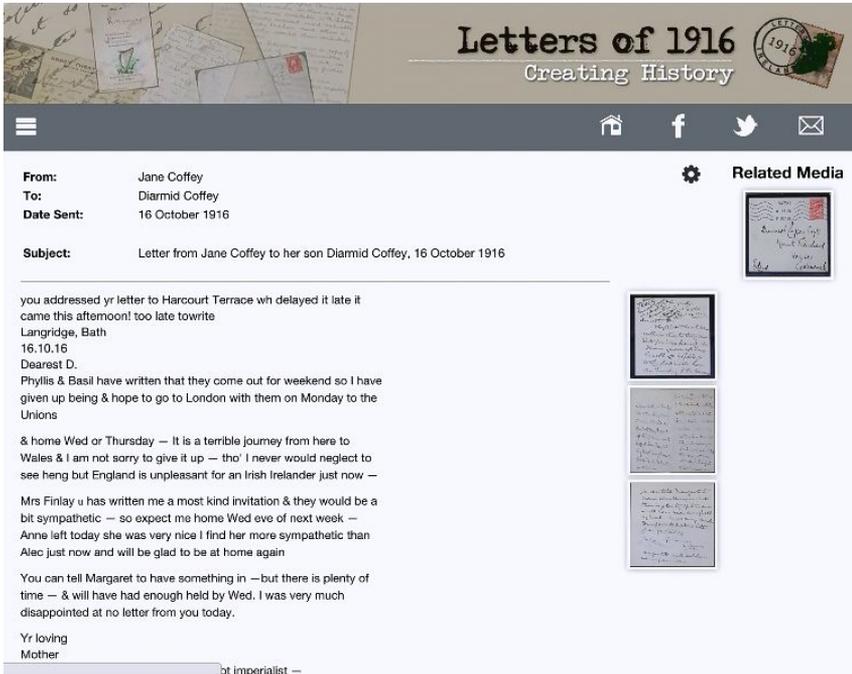


Figure 5: Prototype Letter page

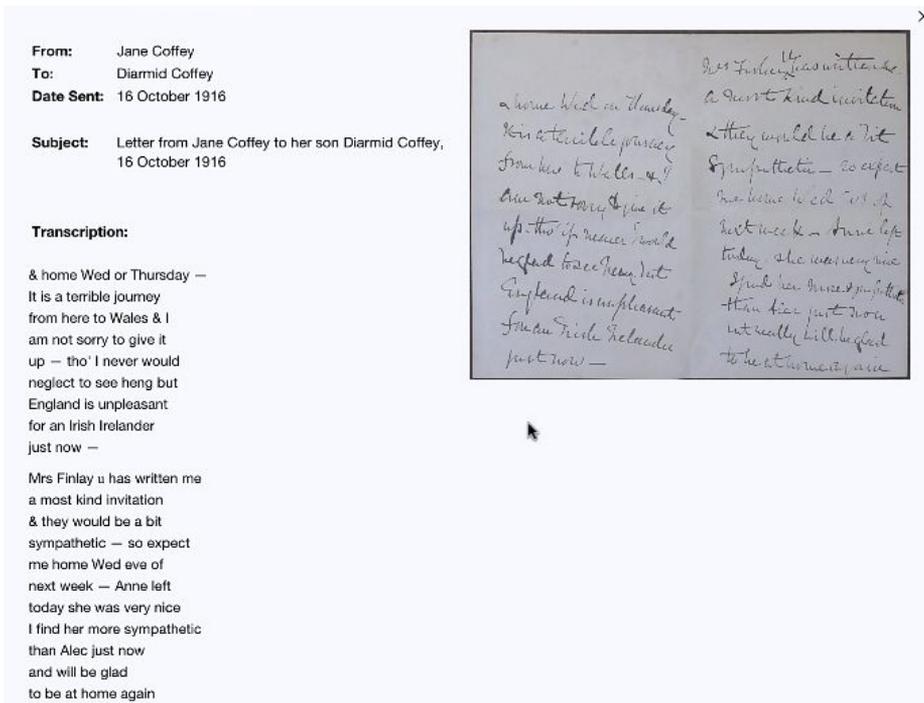


Figure 6: Prototype pop-up window displaying a letter image and transcription

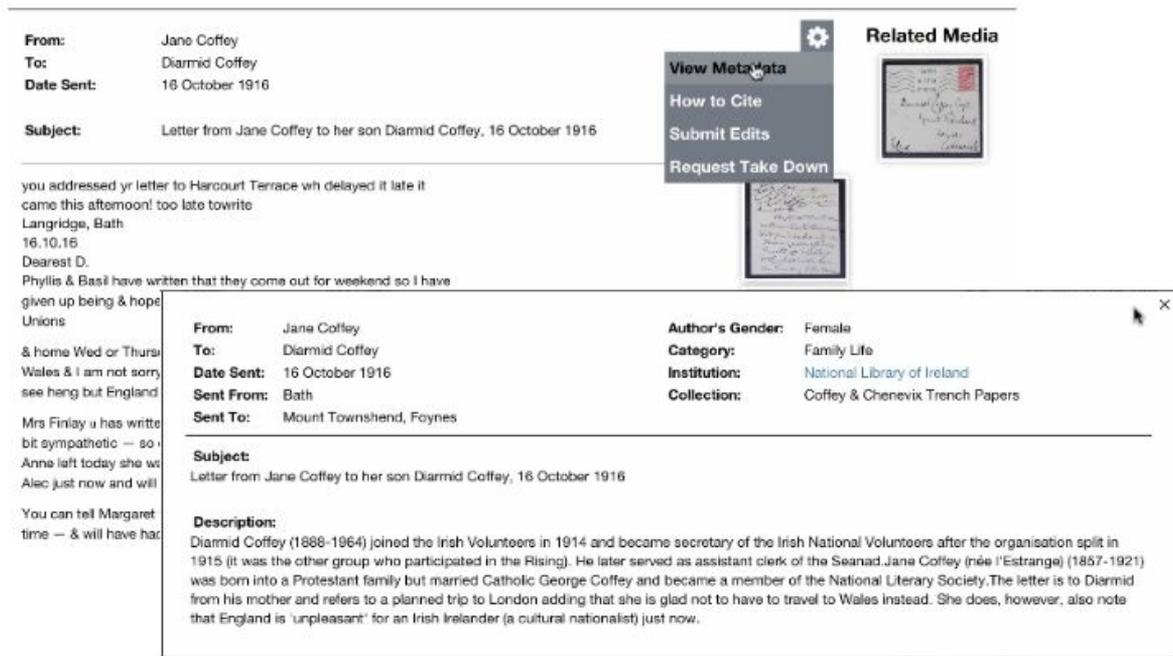


Figure 7: Prototype letter page illustrating drop-down "Gear" menu; *View Metadata* item has been chosen and metadata pop-up window is displayed.

4.2 Letter Pages

As detailed in Section 2, one of the main user goals was the ability to view and work with a chosen letter, understanding how to access a letter's related media and metadata and, in the case of academics, how to cite a letter. The aim of the letters page was to fulfill these goals.

Selection of a search result brought the user to the relevant letter page, as illustrated in Figure 5. To the left of the page, beneath some brief metadata fields, was a transcription of the letter. To the right of this transcription was a vertical series of thumbnails, one for each page of the letter. Clicking on a thumbnail produced a pop-up window (Figure 6) showing the page image to the right and, to the left, a transcription for this particular page. Unlike the transcription on the main letter page, this transcription followed the line-breaks in the original letter.

The gear icon, near the top right of the letter page, identified a pull-down menu, as illustrated in Figure 7. Choosing the *View Metadata* menu item resulted in the pop-up window, also illustrated in Figure 7, which listed some metadata fields and a *Description*. The latter was an abstract, written by editorial staff, that summarised the content of the letter and, where available, provided historical context regarding the author and recipient. The metadata field *Author's Gender* was included in order to support research regarding diversity and the role of women in 1916.

To the right of the letters page was a column headed Related Media that listed thumbnails of such items as the front of the envelope, photographs related to the sender or recipient, and postcards or other correspondence that were outside the time period of the project.

5 Methodology

Usability testing was performed during July 2015. The 'think-aloud' method was employed and the test format was based on that recommended by Rubin and Chisnell (2008) and Krug (2005). Prior to testing with the participants, a pilot test was carried out.

5.1 Participants

As mentioned in Section 2, the *Letters of 1916* project team identified the target audience for the Digital Edition as comprising primarily "the general public with a general interest in Irish history during the Great War period" (McGarry, 2015). Additionally, two other core user groups were identified. The first of these was the digital humanist, described as "a trained academic researcher with strong technical skills and experience using digital editions and the various tools these editions provide" (McGarry, 2015). The final proposed core group was the traditional academic: "this persona tends to be less technically oriented and is unfamiliar with the traditional tropes of digital scholarly editions" (McGarry, 2015).

Purposive and snowball sampling were employed to recruit a total of eleven participants. Of these, four were coded as "digital humanists" (DH), two as "traditional academics" (TA) and five as "general public".

Four members of the "general public" group had previously volunteered to transcribe and upload letters. This meant that they were already familiar with the project and with the Transcription Desk. This was a research limitation in some respects. However, their prior involvement was a result of their genuine interest in the site, thus ensuring that their interactions during testing were more realistic. Three of these Transcription Desk volunteers were able to provide the perspective of users in the older, retired age bracket; they were coded as GPRV (General Public Retired Volunteer). The remaining Transcription Desk volunteer was labelled GPV (General Public Volunteer) and the fifth member of the general public group was labelled GP. As expected, the general public participants possessed a varied range of technical skills, from web professional (GPV) to very occasional computer-user (a member of the GPRV subgroup).

Unsurprisingly, there was overlap between membership of the three groups. It proved particularly challenging to classify academics as "traditional" or "digital humanists"; in this case, the decision was made through self-classification by the relevant participant.

5.2 Scenarios

The user goals identified in Section 2 informed the design of the usability test scenarios listed in Table 1.

TABLE 1: Usability test scenarios

<p>Scenario 1: You are doing some research on your granny who, for this session, is called May. (We will be inventing a few relatives for you this morning!) Find all the letters that are of relevance to her on the site.</p>
<p>Scenario 2:</p> <p>(a) You know that there is a letter on the website from your Great Aunt Jane to her son Diarmid. By looking at this letter in its original form, find out who Jane found to be more sympathetic than Alec.</p> <p>(b) Where was the letter sent from?</p> <p>(c) Find out what collection this letter comes from.</p>
<p>Scenario 3: You are curious to see if there is a postcard on the website to your Great Uncle Paddy O'Loughlin. Try and find it.</p>
<p>Scenario 4: Access a citation for the letter from Patrick to Ellen using the Harvard Referencing Style.</p>
<p>Scenario 5: Find all letters written in Irish about the Irish Question that were sent from Cork.</p>

Scenario 6: Volunteer to transcribe some (more) letters.

5.3 The usability tests

At the start of each test, the facilitator read an introductory script (based on (Krug, 2005)) that welcomed the participant and explained how the test would be performed. The participant then completed a form consenting to recording of on-screen activity and audio. This was followed by a pre-test questionnaire (Appendix A) that included questions concerning their use of IT and their familiarity, if any, with the *Letters of 1916* project. They were then asked for their first impressions of the Digital Edition homepage. Next, they completed the six scenario-based tasks listed in Table 1. Finally, a post-test questionnaire (Appendix B) explored the participants' overall experience of the site.

5.4 Data Analysis

The usability test sessions were transcribed and then coded. A mixed methods approach to data analysis, coding and theme extraction was employed. The use of *a priori* codes, based on the project's user goals, were combined with emerging codes. All transcripts were coded by a single researcher, thus avoiding issues concerning inter-coder reliability (Cho, 2008).

6 Results

In the case of all participants, the overall response to the site was positive. They were excited about the project, felt a strong sense of ownership of it, and trusted the credentials of the project owners. Participants were particularly excited to see the images of the original letters. Although they had some issues with the site, they appeared to enjoy exploring it. They were happy to experiment and, when they experienced problems with functionality, the following comments were typical: "If I was at home, I'd carry on searching" [GPRV]; "Curiosity would bring me to it" [GPRV].

6.1 Navigation

6.1.1 Digital Edition Homepage

As mentioned in Section 4, the design of the Digital Edition homepage, as illustrated in Figure 1, was not a main focus of the testing. Comments concerning the visual design, such as suggestions to reduce the amount of text, and confusion as to the function and lack of clickability of the images, were largely predictable. Although the immediate response to the

homepage was universally positive, participants quickly highlighted the need for a more identifiable call for action in order to provide a clearer indication of how users could progress. Comments included "There should be two buttons here that say "search" and "contribute". I'm looking and thinking "What do I do here?" [TA]

6.1.2 The Hamburger icon

Dissatisfaction with the hamburger icon crossed all participant groups. Some members of each groups did not recognise it, although two DHs guessed that it could be related to further options. Comments included:

"I've no idea what that would do. I guess I would probably click on it and see" [TA].

"I'm probably going to click on this mail thing [mail icon] and see if that is where I would find the letters" [TA].

A majority of participants wanted to see menu options directly listed on the home page. Others [2 DHs; GP] were happy with the hidden menu but wanted it more clearly labelled; for example: "Even if it said *Menu*. It's very blank as it is, and something about that puts me off a website" [DH]. Only one participant was entirely happy with the hamburger: "[It's] common sense - everything uses that symbol these days" [TA].

6.1.3 Returning to previous pages and starting new searches

All participants had difficulty in finding their way back to the search page, whether to view previous search results or to start a new search. Some participants from all groups (including all GPRV) stated that they would generally use the browser back button in order to perform these tasks. However, when attempting this, two GPRV found themselves on the wrong page. For example, when clicking on the browser back arrow, one participant chose the item at the bottom of the drop-down list of previous destinations, rather than the item at the top.

6.1.4 Navigation Terminology

"If I was volunteering and saw *Collaborate* and *Transcribers*, I wouldn't think it was open to everyone, which I know it is" [GPRV].

The meaning of the term *Transcription Desk* was unclear to TAs and to the GP (who had not been a volunteer transcriber). Furthermore, the relationship between the Transcription Desk

and the Digital Edition was confusing to some participants from all groups. Two participants [TA; DH] navigated to the Transcription Desk by accident while looking for the Digital Edition search interface:

“I feel like I'm home now but for some reason it doesn't look like where I started” [TA].

One TA assumed that the Transcription Desk would be the place to search for letters:

“This is where everyone is uploading the letters so if I'm looking for a letter, wouldn't I go to where everyone is uploading?”

As expected, the general public participants did not fully understand the scenario requesting participants to “Access a citation for the letter from Patrick to Ellen using the Harvard Referencing Style”. However, academic users had no problems with this feature once they had found the relevant menu item.

6.2 Searching

6.2.1 Initial layout of Search page

Before any search was performed, the search page listed details of the letters available on the site. Views were mixed concerning this initial layout. Two former transcription volunteers were interested to see the letter details: “I like this summary at the start because it means you can say “Ok, this is what the letters look like” and I have that picture in my head before I start searching” [GPV]. Two DH were noncommittal. But the rest of the participants found it confusing: “Now I'm on the search page. I'm not sure why there are all these lists of letters already” [DH].

The combination of the pre-search display of letter metadata with the auto-search results feature caused further confusion for some participants, as it was often not clear to them when or whether a search had taken place.

6.2.2 Simple search

On arriving at the search page for the first time, a majority of participants from all groups immediately selected the *Category* option and looked at the resulting pull-down menu. Most of the time, they did not choose anything from the menu, but proceeded to enter a term in the *Text* box instead. The popularity of *Category* appeared to be simply because it was the first option on the left of the page: “[I selected *Category*] because it's the first field there” [DH].

After their first exposure to the search page, the majority of participants across all groups attempted to perform all searches by entering search terms in the *Text* or *Search* box. This was the preferred option, even for the more complex scenario (namely, “Find all letters written in Irish about the Irish Question that were sent from Cork”). Starting with the *Search* box was generally seen as the intuitive approach. Only when this did not produce the required results did the participants consider using other options. In these cases, they tended to choose just one extra field, often Category; this was frequently followed by entry of all other relevant terms in the *Text* or *Search* box as before.

One DH wanted to see simple and advanced search functionality displayed on first access of the search page. All other participants, who stated a view, wanted access to a simple search box with an option to refine [DH; TA; GP; GPRV] or a simple search box with an option to select an advanced search feature [DH, 2 TAs].

The central importance of people's names was highlighted regularly in participants' comments across all groups. For example: "That's what people know - they know the name....90% of people will go in with a name" [GP]. Although *Sender* and *Recipient* metadata fields were available via the search results page and on the letter pages, there was no specific option for searching for these two fields. Some participants commented on this, for example: “I would like to look for names separately from text.....I'm not quite sure how I search for a letter from a particular person because none of these boxes say “writer”” [DH].

6.2.3 Advanced search options: The “+” menu

Most participants ignored the “+” icon until specifically asked what it meant.

“I wouldn't even look at that because it's not obvious” [DH].

“Is there an advanced search option?.....[Clicks on mag glass]...No” [DH].

“Ok, I'm not following this at all” [TA].

None of the candidates understood the function of the “+” icon until they had experimented with it, whereupon most found it confusing. This feature was mentioned by the majority of participants in the post-test questionnaire as one of the aspects of the site that they least liked.

When experimenting with the "+" icon, several participants [TA; GP; 2 GPRVs] did not notice that choosing a menu item resulted in a new search option appearing on the screen (as illustrated in Figure 4). When they eventually realised what was happening, all stated a preference for all the advanced search options to appear at the same time, rather than having to be chosen individually.

6.2.4 Filtering

Once the search results page was displayed, some users from all groups behaved as if any action on their part initiated filtering on the letter metadata currently listed. For example, there appeared to be an assumption that selecting a category or a date range or entering terms in the *Text* or *Search* box, would result in filtering. Further, participants appeared to assume that this filtering was cumulative; the same results or listings were being successively filtered. This assumption was aided by the fact that it was difficult for the participants to identify when a change in the display of letter metadata had taken place and when it had not. In fact, there was no facility in the system to filter results.

6.2.5 Search Terminology

The term *Text* confused participants in all groups.

"Has the spelling to be absolutely correct? Has the name to be absolutely right if it says *Text* instead of *Search*?" [GPRV]

"It's very unlikely people would know what's in the letters.... So *Text* seems a bit intimidating because... that's what I'm here to find out - what they are writing about" [TA].

In general, the use of terms *Sent from*, *Sent to* and *Sent between* caused confusion, as any one of them could refer to person, place or time. Language abbreviations such as "Ga" (Gaeilge) were not obvious to everyone [2 GPRV]. The meaning of the *Type* option and the related menu items, such as *Enclosure* and *Correspondence*, was not clear to the participants who viewed them. And the difference between *Collection*, *Institution* and *Category* were not obvious to some [GP; 2 GPRV; 2 TA].

6.2.6 The Magnifying glass

The magnifying glass icon, to the right of the *Text* box, was recognised by some [DH; GP, TA] as the prompt to initiate search. Others, from all groups, did not notice it or did not understand its function; a DH initially suggested that its role might be to magnify the screen.

Some of the confusion appeared to be caused by the fact that the icon was not immediately to the right of the *Text* box, but separated from it by the “+” sign. Some misinterpretation may also have resulted from the font in which the magnifying glass was displayed: its handle was very short so that the icon looked almost like the letter “Q”.

6.3 The Letters pages

The participants were largely positive about the letter page layout. They appreciated its clarity, and were excited to see the letter images. Some immediately understood that the pop-up window transcription followed the line breaks of the original letter. Others were initially confused but were happy with the layout when they realised this: “[A] bit difficult to read... like obscure poetry...I am slowly being convinced that it’s important to keep it in original format” [TA]. One participant was adamant that it should be “tidied up... and look like a letter even if it’s not identical to the letter that’s in the image” [DH].

The full transcription on the main letter page was not always noticed at first, as participants were keen to see the individual page images. But, when they noticed it, they appreciated the fact that this version of the transcription did not follow the original line breaks but presented full lines of text.

Participants from all groups suggested that the separate components of the letter, for example the header, the main body and any prefix or suffix material, should be distinguished in some way. A TA did not recognise that the material appearing before the salutation in Figure 5 was the end of the same letter.

Some of the pages were readable as presented; others were not. All participants wanted a zoom option. One letter included an image of two pages in one shot (as illustrated in Figure 6). A DH suggested that this be split into two images for “visual continuity” and so that access to the transcription would require less scrolling.

6.3.1 Metadata

The meaning of the term “metadata” was unclear for most participants apart from the DHs and one member of the general public; the latter recognised the term from their involvement in gaming blogs.

As already detailed, the metadata pop-up window was accessed via the *View Metadata* item in the gear menu. But, when a scenario required the discovery of an item of metadata, such as the collection to which a letter belonged or the location that a letter was sent from,

participants first looked directly on the letter page. Not having found the information there, participants scanned various combinations of the transcripts, the header, the bottom of the page, the envelope, related media and the search results. A GPRV looked in the search options in the “+” advanced menu. Several gave up: “ I’m stumped” [GPRV].

Once participants had found, or been shown, the metadata pop-up window, the majority felt that the information it contained should be more accessible: either directly presented on the letter page or directly linkable from it. Several participants [3 DHs; GPV] suggested that, instead of presenting all the metadata for a letter and any related media in one popup, further information on different aspects of the letter could be presented separately. So, for example, information about the sender and recipient could be accessible directly from their names. Likewise, metadata about the letter, historical background and related media could all be accessible independently [DH].

In general, there was confusion between filtering options, sorting options, the metadata presented in the search results fields, the metadata presented on the letters pages and the metadata presented via the *View Metadata* menu item. For example, the language column and the language search option were confused at times.

6.3.2 The Gear icon

Some participants noticed the gear icon by chance as their cursors roamed the screen. Others explored it only when, after exhausting all other options, the facilitator hinted that there was another method of finding the required information. None of the participants guessed the correct function of the gear icon. Some of the more technical participants assumed that it was concerned with technical settings, but were not sure exactly what:

“This settings cog makes me think that it's settings... something to do with setting up text font size or something like that, so I would normally never even look even at that” [GPV].

“ When I see settings, I would think I'm not supposed to be changing anything” [DH].

One DH assumed the gear was something to do with starting a new search. Other assumptions were more accurate:

“It’s something I'm used to seeing on website in general...It tends to mean.. extra information” [TA].

The GP assumed that the gear menu items were place holders for more “every-day” terms: “Obviously these aren't going to be on the full site when you get the site up and running”

Once participants had discovered the gear menu, views were split as to whether it should be hidden or visible. Most of the DHs preferred the “clean”, “uncluttered” look of the hidden menu, whilst most others wanted the page to be more informative and, thus, wanted the information in view.

6.3.3 Related Media

The term *Related Media* caused some confusion. There was uncertainty as to what items could be listed under this title. Suggestions included: just the envelope [DH]; items that had been enclosed in the letter in question [DH]; thumbnails of all the other correspondence between the sender and receiver [2 GPRVs, DH]; links to related themes [DH]; links to related people or families [GPRV].

A DH suggested that, where the envelope was available, an image of the back of the envelope should also be displayed; a wax mark is sometimes visible on envelopes of this period and this is of great interest to historians.

Participants wanted to see metadata for the related media but there was some confusion as to how to find it. References to the related media in the metadata *Description* generally went unnoticed but, when they were noticed, they were greatly appreciated, particularly by transcribers who had submitted such information themselves. In general, participants wanted items of related media to have their own separate and readily accessible metadata. In addition, the lack of transcriptions for related media such as postcards was a cause of disappointment for the majority of participants.

6.3.3.1 Searching for Related Media

The Related Media for a "Letter from Patrick O'Loughlin to Ellen O'Loughlin" included a postcard of an image of Patrick and Ellen sent in July 1921. Because this was outside the period covered by the collection, it was not a searchable item in its own right and, thus, did not appear in the search results. The reason for this exclusion was not clear to all participants. When it was pointed out that the postcard was outside the project's time parameters, the majority continued to feel that the postcard should be accessible via search.

In fact, its absence in the search results gave one DH concerns about the trustworthiness of the search function:

“I would not be able to trust the direct search because I know now that it's not bringing up related documents .. when you search for a specific thing like a person” [DH].

7 Discussion

This section introduces the live release *Letters of 1916* Digital Edition and discusses how the results of the usability tests impacted on its design. Figures 8 to 10 provide screenshots from the *Letters of 1916* live release. As of October 2016, although letter transcriptions are still being carried out, the main focus of the site is the Digital Edition.

7.1 Facilitating the user base

Usability testing contributed to an understanding of how the Digital Edition could effectively and efficiently satisfy the user goals of a diverse audience that spanned a range of different ages, skills, motivations and levels of previous exposure to the *Letters of 1916* project.

Results indicate that there were some differences in interactions due to age; for example, the general public retired volunteers (GPRV) were more likely to become totally "stumped" when experiencing problems with navigation. And, as predicted by the literature, these older users more frequently assumed that they, and not the system, had caused the problems in question. In contrast, the digital humanists were more prone to blame the system and were more able to recover from problems. Further, digital humanists were more likely to prefer a minimalist layout, while most others wanted a more informative interface. However, the results imply less of a difference in expectations and requirements between the groups than had been predicted. On the whole, what delighted one group of participants delighted all groups. And what confused or frustrated one group had the same effect on everyone.

Design of the prototype Digital Edition assumed that academic users would require a specialised search interface, including complex advanced search features. However, results imply that even digital humanists were not looking for a unique and specialised interface, but assumed, and preferred, a user experience that reflected common search systems. The Digital Edition live release aims to meet these preferences.

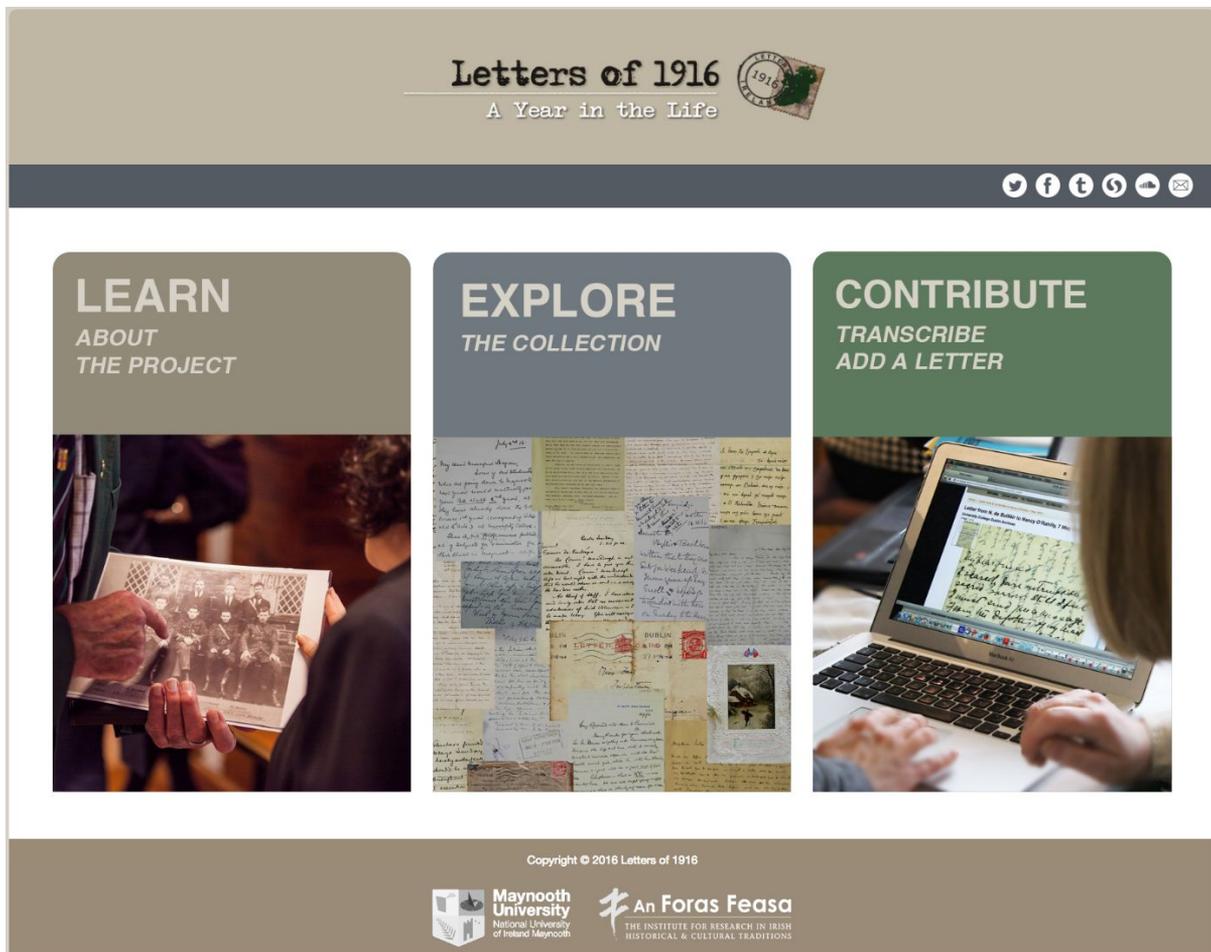


Figure 8: March 2016 live release Letters of 1916 Home page

7.2 The live release of *Letters of 1916* Digital Edition

With the launch of the Digital Edition, a new homepage was released for the *Letters of 1916* project. As illustrated in Figure 8, this homepage provides access to further information about the project, the Digital edition and the Transcription Desk. These three sections of the site are accessed via three mega buttons: *Learn*, *Explore* and *Contribute* respectively. Once the user has navigated to the Digital Edition, the three options are available via a simple, horizontal, persistently visible menu, as shown in Figure 9. This menu replaces the previously hidden vertical global menu, formerly accessed via the hamburger icon. A simple secondary menu provides persistent access to the Search and Browse features throughout the Digital Edition. These options more accurately reflect the user tasks and help users to maintain a mental model of context and site organisation.

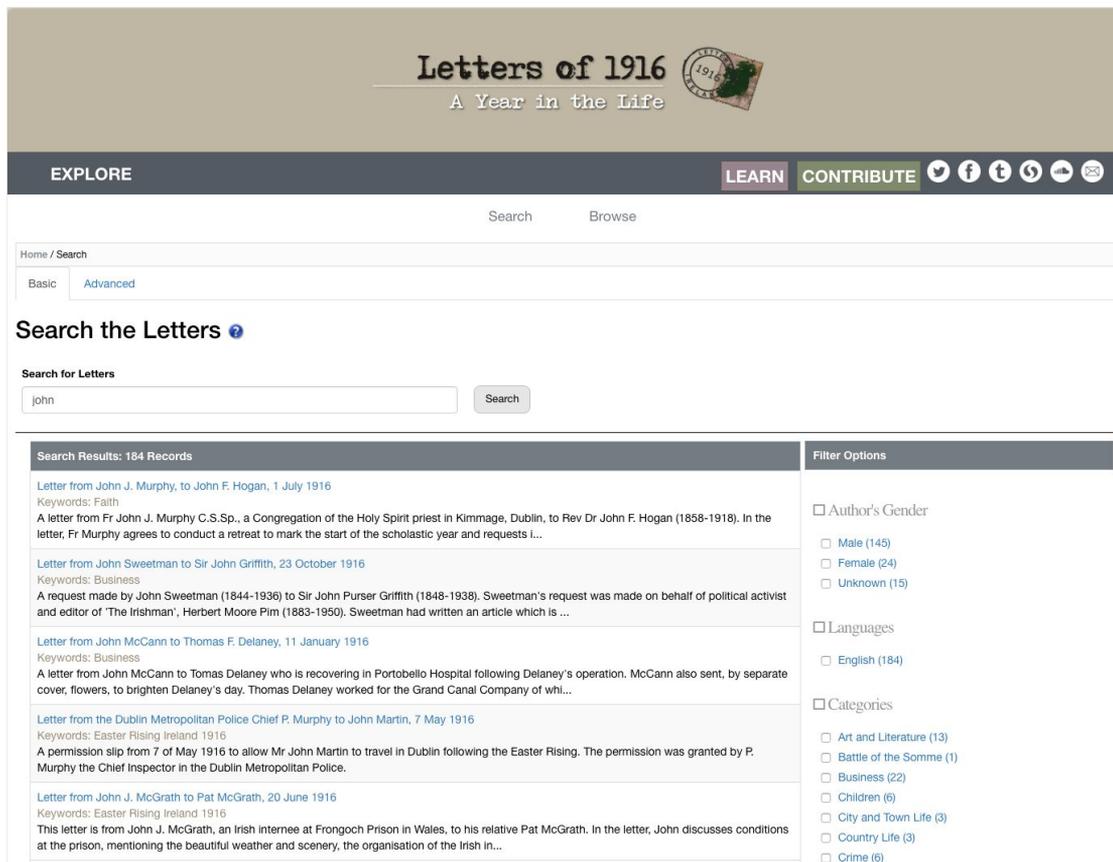


Figure 9: Live release Digital Edition Search Results page

7.2 The live release of *Letters of 1916* Digital Edition

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7.3 Searching, filtering and browsing

As Reiss (2012) comments, "Hiding functionality to create the illusion of simplicity is an approach that saps user-efficiency". Test results indicate that the majority of the project's users, be they digital humanities scholars, traditional academics or the general public, want a simple search box, without hidden features, plus the option of filtering results or accessing advanced search. Further, they want the search to function in a manner as similar as possible to the most common search engines.

Although the prototype system provided multiple advanced search features, it did not provide any filtering options; this may have primed participants to focus on advanced search over filtering. Despite this, the option of filtering appeared more popular than the option of advanced search, particularly among the general public participants. Thus, as illustrated in Figure 9, the live release provides a simple search box, long enough to handle common query lengths; auto-suggest but no instant results; and the facility to filter results.

The prototype Digital Edition aimed to combine searching and browsing, by populating the search page with details of all letters available on the site, prior to search. However, this did not provide the user with a structured overview of the site content. Further, it did not employ "induced inconsistency", whereby "pages that have changed look changed" (Tognazzini, 2014). Thus, in the live release, browsing is explicitly supported via a separate feature, which facilitates browsing by category and by month. Unlike the prototype, no letter metadata is displayed before a search is performed; Figure 9 illustrates the new search page once a search has taken place.

The prototype Digital Edition only searched the letter body. As explained via a scroll-over pop-up help box, the release version searches across the following letter metadata fields:

- Title
- Abstract
- Collection Name / Number
- Content of the letter (including its translation if applicable)
- Name of the Sender / Recipient
- Location of the Sender / Recipient (if known)
- Category
- Institution

- Collection number

Unlike the prototype version, the updated search results page mimics that of major search engines and e-commerce sites: it presents each search result in the form of a title, keywords and description.

In response to further informal feedback from digital humanists and traditional academics, an advanced search page, providing the option of boolean and date range searching, has subsequently been incorporated. However, further usability testing would be required to determine the extent to which this advanced search feature will actually be employed by users.

Test results indicated a mismatch between the metadata fields provided for searching or viewing, and the metadata that typical users want to search or view. Thus, as well as simplifying the search options, the live release avoids the display of metadata fields for which there is no identified user need, for example, the search term *Type*, and the search results field *Pages*.

7.4 People as central entities

The six usability test scenarios were developed, in collaboration with the project team, to reflect the typical interactions that potential users might have with the *Letters of 1916* Digital Edition. Thus, four of the six scenarios involved finding information about letters to or from specific people. Test results support the assumption that a majority of users, particularly those in the general public group, regard people - the senders and recipients and the subjects of discussion in the letters - as the central entities of the Digital Edition. Results also suggest that most searches of the Digital Edition, particularly those by the general public, are likely to be for particular names, often the names of a relative of the user. Thus, the user goal is less likely to be "I am looking for a letter" and more likely to be "I am looking for anything about my great granny".

Results suggest that the search functionality of the test release did not always support the centrality of the person; at times, the design implied that the central user focus was the letters. In response to this, and as detailed in Section 7.3, searches in the live release are performed across metadata fields *Sender* and *Recipient*, as well as a range of other fields. Another response to the research findings has been to provide transcriptions of related media, such as postcards, even when such media are not within the project's date range of November 1915 to December 1916; thus extra information is provided about the people involved in the letters. Making all related media items searchable would further facilitate the

focus on the person as opposed to the letter, in that it would allow all items of relevance to a particular character to be directly findable via search. However, implementation of this feature is not possible due to resource restraints. The impact of this decision is diminished by the low number of items with related media in the current system. Converting the *From* and *To* fields on the letters page (Figure 10) into clickable links could provide a further method of accessing all letters and related media with a connection to an individual.

Results imply that, as well as being interested in individuals, general public participants are also interested in broad themes, but that, in this case, they prefer to browse rather than search for them. The browse feature in the Digital Edition live release caters for this identified need.

Letters of 1916
A Year in the Life

EXPLORE LEARN CONTRIBUTE [Social Media Icons]

Search Browse

From: Jane Coffey
To: Diarmid Coffey
Date Sent: 16 October 1916
Subject: Letter from Jane Coffey to her son Diarmid Coffey, 16 October 1916

[you addressed yr [sic] letter to Harcourt Terrace wh [sic] delayed it late it came this afternoon! too late to write]

Langridge,
Bath
16.10.16
Dearest D.

Phyllis & Basil have written that they come out for weekend so I have given up being [...] & hope to go to London with them on Monday to the Unions & home Wed or Thursday — It is a terrible journey from here to Wales & I am not sorry to give it up — tho' I never would neglect to see heng but England is unpleasant for an Irish Irelander just now — Mrs Finlay u has written me a most kind invitation & they would be a bit sympathetic — so expect me home Wed eve of next week — Anne left today she was very nice I find her more sympathetic than Alec just now and really will be glad to be at home again

You can tell Margaret to have something in — but there is plenty of time — & will have had enough held by Wed. I was very much disappointed at no letter from you today.

Yr [sic] loving
Mother.

[no letter[...]...]
[How good to meet soldiers not imperialist —]

Summary

This letter was addressed to Diarmid Coffey (1888-1964) from his mother Jane Coffey (née l'Estrange) (1857-1921). The letter refers to a planned trip to London. The trip is a welcome replacement for a journey to Wales, however, Jane feels that England is an unpleasant place for an 'Irish Irelander' right now.

Diarmid Coffey was born on 24 December 1888 in Dublin. He was a public

Categories
Collection
Citation & Contributors
Envelopes, Photos, and Additional Material
Share & Feedback

Copyright © 2016 Letters of 1916

Figure 10: Live release Letter page

7.5 Information Architecture

The content of the *Letters of 1916* site is unique and exciting. The information architecture and navigation should be neither unique nor exciting, but predictable and obvious. Test participants regularly referred to "what most websites would do" [TA2] when criticising the interface. As Reiss (2012) comments, "In the usability business, surprises are almost always negative".

Results indicate that the meaning of some digital humanities terms were not clear, particularly to the general public. The live release version of the Digital Edition replaces these terms with those that more closely mirror users' perceived needs and tasks. So, for example,

- The phrase *Digital Edition* is not used anywhere on the *Letters of 1916* site. Instead the term *Explore* is employed.
- The phrases *Collaborate* and *Transcription Desk* have been replaced with *Contribute*.
- The *Text* box has become the *Search* box.
- *Related media* has been replaced with the phrase *Envelopes, Photos, and Additional Material*.
- Use of the term *Metadata* has been avoided.

As well as avoiding digital humanities-specific terminology, the release version avoids ambiguous labels such as *Sent from*, *Sent to* and *Sent between* (apart from the *From* and *To* labels on the letters page, where the meaning is made clear by the values of the field and the familiar email-style format). Further, the site's audience is recognised by replacement of the ISO date format (for example: "1916-04-21") with a more comprehensible format (for example: 10 October 1916). Replacement of the language codes *En* and *Ga* by *English* and *Irish* further facilitates a diverse and international audience.

7.6 Navigation

The prototype Digital Edition followed a design pattern made increasingly common by the *mobile first* design approach, namely a main menu hidden behind a hamburger icon, and the use of icons without accompanying text labels. Test results suggested that this hampered site navigation. The pre-test questionnaire indicated that, apart from one DH, participants did not use mobiles to explore sites such as the *Letters of 1916*; rather, most used laptops or desktops. Thus, although mobile access to cultural heritage is becoming increasingly

important (Nicholas, 2013), arguments supporting the use of a *mobile first* design approach may be of less relevance to this particular site.

In response to participant confusion, the live release employs no icons except the site logo, social media icons and a *Contact us* envelope icon. In addition, apart from the site logo, all icons are now provided with explanatory hover boxes.

The site's navigation system has been made broader and shallower. As already explained, the hidden global menu has been replaced by a simple, horizontal menu. As illustrated in Figure 10, the hidden menu represented by the gear icon has been replaced by a vertical accordion menu which defaults to display of the letter *Description* (renamed *Summary*). And, as already mentioned, the default search interface now comprises a simple search box alongside result-filtering options.

In addition, user control and freedom have been improved by the provision of a search button on every page of the Digital Edition, thus allowing a consistent method of starting a new search (Nielsen, 2005). Use of the back button now provides a uniform method of returning to the previous page. In the case of returning to the search page, the back button returns to the previously selected search terms. The *home* icon has disappeared; the clickable site logo now acts a permanent *home* button.

7.7 Task orientation

Test results identified a need for better support for user tasks. Various adaptations in the live release respond to this need, for example, the addition of a zoom feature for letter images. The updated site aims to provide the user with all of the information and tools required for the current step in each process (Tognazzini, 2014). For example, all related media such as envelopes and postcards have now been transcribed, and the transcriptions are listed directly below the image of the media item in question.

Task support has also been improved via changes to the letter page layout, as illustrated in Figure 10. For example:

- Letter components such as prescripts and postscripts are now distinguished via the use of a paler font.
- The letter thumbnails, and those of any *Related Media* (now entitled *Envelopes, Photos, and Additional Material*), are more distinguishable because the latter appear as an item in an accordion menu.

Further the choices and interpretations required of users have been minimised by more clearly identifying content and function. For example, as illustrated in Figure 9, the search results page includes a permanently visible list, not only of all possible filters, but also of all possible filter values. Thus, the user does not need to guess what *Category* or *Institution* mean.

8 Conclusion

Although the prototype version of the *Letters of 1916* Digital Edition had usability issues, the overall user experience of the participants was positive because the content was perceived as useful, desirable, credible and valuable. Improvements following usability testing have resulted in a system that is more usable and accessible, and the content of which is more findable.

The majority of issues that were identified during usability testing were addressed in the subsequent live Digital Edition. It was not possible to address the following issues due to resource or time constraints:

- Incorporating only one letter page in each image (in the minority of cases in which two images are displayed side by side) and providing images of the backs of envelopes.
- Making all related media items searchable, thus enabling all content of relevance to a particular person to be directly findable via a single search.
- Facilitating the recording of searches and the downloading of letter transcriptions.

Initial assumptions concerning user needs resulted in a prototype that employed novel search and navigation methods and minimalist interfaces. However, results of usability testing demonstrated that all users groups preferred familiar search, navigation and information architecture patterns. Results also indicated that specialist users did not necessarily prefer, or require, specialist search functionality.

The audience for digital humanities sites is becoming increasingly diverse. However, these findings imply that the needs of the different user groups may be more similar than had previously been assumed.

9 Notes

[1] Letters of 1916: <http://letters1916.maynoothuniversity.ie/>

[2] The Old Weather Project:

<http://humanities.exeter.ac.uk/history/research/centres/maritime/marhist/oldweather/>

[3] Transcribe Bentham: <http://blogs.ucl.ac.uk/transcribe-bentham/>

[4] Text Encoding Initiative: <http://www.tei-c.org/>

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11 Appendix A: Pre-test Questionnaire

1. What's your occupation?
2. Roughly how many hours a week altogether would you say you spend using the internet, including Web browsing, email, Facebook and so on, at work and at home?
3. What percentage of your internet use is via laptop/desktop, tablet, smartphone?
4. Why did you get involved in the *Letters of 1916* project?
5. How familiar are you with the current *Letters of 1916* website?
6. Are there things you would like to do on the current site that you can't do at present?

12 Appendix B: Post-test questionnaire

1. What is your overall impression of the site?
2. What are two things about the site you really like?
3. What are the two things you like least about the site?
4. Is there anything you would like to do with the site that isn't currently available?