

Evaluating Digital Humanities Resources: The LAIRAH Project Checklist and the Internet Shakespeare Editions Project

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Abstract

The following paper presents a case study of the way that the research done by the LAIRAH project may be applied in the case of a real digital resource for humanities scholarship. We present an evaluation of the Internet Shakespeare Editions website according to the checklist of recommendations which we produced as a result of our research. The LAIRAH (Log analysis of Internet Resources in the Arts and Humanities) project based at UCL's School of Library Archive and Information Studies, was a fifteen month study to discover what influences the long-term sustainability and use of digital resources in the humanities through the analysis and evaluation of real-time use. Our research objectives were to determine the scale of use and neglect of digital resources in the humanities, and to determine whether resources that are used share any common characteristics. We also aimed to highlight areas of good practice, as well as aspects of project design that might be improved to aid greater use and sustainability. A further aim was to determine whether digital resources that were neglected. In our study we concluded that well-used projects share common features that predispose them to success. The effect of institutional and disciplinary culture in the construction of digital humanities projects was significant. We found that critical mass was vital, as was prestige within a university or the acceptance of digital methods in a subject. The importance of good project staff and the availability of technical support also proved vital. If a project as to be well-used it was also essential that information about it should be disseminated as widely as possible. Even amongst well-used projects, however we found areas that might be improved, these included organised user testing, the provision of and easy access to documentation and the lack of updating and maintenance of many resources. The paper discusses our recommendations, which were presented as a check-list under four headings: content, users, maintenance and dissemination. We show why our findings led us to make such recommendations, and discuss their application to the ISE case study.

Keywords: digital humanities; user studies; good practice resource construction

1 Introduction

The following paper presents a case study of the way that the research done by the LAIRAH project may be applied in the case of a real digital resource for humanities scholarship. In it, we present an evaluation of the Internet Shakespeare Editions website according to the checklist of recommendations which we produced as a result of our research (<http://www.ucl.ac.uk/slais/research/circah/features/>).

The LAIRAH (Log analysis of Internet Resources in the Arts and Humanities) project (<http://www.ucl.ac.uk/slais/research/circah/lairah>) based at UCL's School of Library Archive and Information Studies, was a fifteen month study to discover what influences the long-term sustainability and use of digital resources in the humanities through the analysis and evaluation of real-time use. Our research objectives were to determine the scale of use and neglect of digital resources in the humanities, and to determine whether resources that are used share any common characteristics. We also aimed to highlight areas of good practice, as well as aspects of project design that might be improved to aid greater use and sustainability. A further aim was to determine whether digital resources that were neglected might be re-used. As a result of this research the project created a list of recommendations for features that, if possible, the idea successful digital resource ought to have. We also made recommendations to aid the UK's Arts and Humanities Research Council (AHRC), who funded to project, to develop their strategy for funding usable digital resources for future humanities research.

Numerous studies have been carried out into the information needs and information seeking practices of humanities scholars, over recent years [1-5]. We are not aware, however, of any literature that has used quantitative methods, particularly deep log analysis, (described below) to measure the levels of use of digital humanities resources. Our research also concentrates not on the generality of resources, but on the question of

what *kind* of digital resource is most useful for researchers. Although this has been approached by other projects, evidence has been entirely self-reported. Our research is also the first study which has enabled a comparison of the preferences that users report to quantitative evidence of what they actually use.

2 Methodology

The research was funded by the AHRC as part of its ICT Strategy Scheme. We therefore studied digital resources for humanities research which were based in the UK and non-commercially funded. In the first phase of the project we used deep log analysis of web servers of three humanities portal sites in the UK to determine whether it was possible to assess levels of use of digital resources accessed through these portals. These were the Arts and Humanities Data Service, (AHDS) Humbul Humanities Hub, and Artefact (the last two have now merged to become Intute Arts and Humanities) We discuss this analysis in more detail elsewhere, however, in essence we used the data that web server logs automatically record to determine how the sites were used, in terms of levels of use, which parts of the site were used, where users came from and where they went after leaving the site [6]. Although absolute levels are difficult to gauge our research suggested that roughly a third of the resources remained unused. As a result of our analysis we then chose a sample of projects to be studied in more depth. In the following paper, therefore, the results are mainly based on our qualitative methods. We show how the resulting recommendations may be applied to the analysis of an actual digital humanities research resource, and how our work is adding to the dissemination of good practice in digital resource construction and sustainability.

Our qualitative methods involved the selection of a sample of twenty one well used projects for further study. These were studied to see whether there were any common elements of good practice amongst resources that were well used. A representative from the team which constructed the resource, ideally the PI, was interviewed and any documentation available though the project website studied.

To determine whether neglected projects could be reused, we ran two user workshops where participants were asked to examine a sample of eleven resources which were both used and neglected and to discuss their opinions of them. To identify the neglected resources we used the results of the log analysis and also contacted representatives of the AHDS, who gave us additional information about which resources they felt to be most commonly used, or entirely neglected. We also wished to know whether there was any reason why neglected resources were not used, in addition to possible lack of knowledge about them. We did not wish to create bias by telling participants which were used and which neglected, and asked whether they could determine which resources were neglected, and why they felt that this might be. We were surprised to find that participants were highly critical of resource quality, and tended to identify well-used projects as neglected, rather than the opposite.

As a result of our qualitative research we made a number of recommendations for good practice in digital resource construction. These are presented in detail in the project report [7], however, for ease of use, we also produced a simple checklist, intended for those who either are, or would like to be, the producers of scholarly digital resources for humanities research which may be found at <http://www.ucl.ac.uk/slais/research/circah/lairah/features/>. We hope, however that such recommendations may also be more widely applicable, and relate to other sectors of digital resource publication.

In the following paper, we use the checklist that we created and demonstrate how it may be used to evaluate a real digital resource, the *Internet Shakespeare Editions Project* (ISE) (<http://ise.uvic.ca/index.html>). This also provides a framework for a more detailed discussion of the findings from the qualitative phase of our research. We have used this site because the ISE team approached us after the initial findings of the LAIRAH project had been made public, and asked if we would be willing to use the checklist to evaluate their site. They will be using the results of the evaluation for further development of the ISE, however it also presents us with an ideal opportunity to show how the checklist can be employed in the case of an actual digital research resource. Thus each section begins with the recommendation, we then explain the basis on which we made it, as a result of the findings of our research, and the results of the evaluation are then discussed.

3 Results

3.1 Content

3.1.1 The ideal digital resource should have an unambiguous name that indicates its purpose or content

Our log data initially showed that the names and search terms that are used are significant. For example, resources entitled 'census data' were, not surprisingly, popular. However, a similar resource appeared neglected, perhaps because it was called 'Enumerator returns for county X'. Since keyword searching cannot automatically link synonymous terms, a search on 'census' would not have found the latter resource. Discussion at the workshops also revealed that participants could be confused by misleading titles. Some participants thought that a resource entitled 'The Channel Tunnel Rail Link Archive' would be neglected, since they assumed that it contained digitised records of a railway or engineering company. In fact it is a very well used archive of archaeological documentation for the excavations carried out before the link was built. Conversely a resource called 'The Imperial War Museum Concise Art Collection' was praised, since it was immediately clear to users what it contained, and gave the reassurance of a trusted brand in the museums world, thus participants assumed the contents would be of high quality.

The case study resource is called Internet Shakespeare Editions. This is an excellent description of the site, which also offers numerous additional resources for Shakespeare scholars. However it would be unrealistic to try to describe these in the site's name.

The URL, <http://ise.uvic.ca/index.html>, however does not reflect the name and may be difficult to remember, as compared, for example, to the Old Bailey Online project, who have acquired a domain name which is easy to recall. (<http://www.oldbaileyonline.org/>). However, one important facet of the current URL is that it places the ISE within the domain of a respected university. This type of institutional brand helps users to trust to integrity of the site and the quality of its contents. When a Google search was performed on the keyword 'Shakespeare' ISE came in the 50-60 screen of results, out of a total of 53,000,000 hits. This is a creditable performance, considering the popularity of Shakespeare as a topic. However, it might be improved by encouraging as many users, English departments, and libraries as possible to create links to the ISE page.

3.1.2 The ideal digital resource should concern a subject that is either popular in a wide community or essential for a smaller expert one

The log data demonstrated that certain subjects and themes were particularly popular, for example, warfare, census data, witchcraft, Shakespeare and women's suffrage. We do not know exactly what purpose the resources are being put to, whether high level academic study, family history research or a school history project, for example. However, it is clear that digital resources concerning certain popular subjects are likely to be well used. Nevertheless participants at our workshops stressed the importance of resources which might be vital to research in a relatively small community, whose work would be significantly impoverished without them. It would also be unwise to concentrate research funds on a small number of popular subjects, and neglect less popular areas, since we cannot know which topics, perhaps now neglected, may be widely studied in future.

The ISE website evidently concerns Shakespeare, which is both very popular in the wider community as well as being an important research topic for academics. The website offers two types of navigation, by Academic divisions- done through the metaphor of a building- and by Subject area. This is an interesting way to help different user groups to access the content. As part of the LAIRAH research we found that users felt confused by many sites that were only designed for experts in the subject, and assumed a high level of knowledge about resources and how they should be used. This dual path is thus good practice, since it allows users to access materials in a way that is most useful for them. The functions of the different parts of the site, and the different methods of navigating them are also very clearly described in the About section page, 'How to use this Site' <http://ise.uvic.ca/Foyer/index2.html>. This is a simple and very helpful page title, given that we have found that clear signposting is invaluable, especially for less expert users (discussed below in section 3.2.3)

3.1.3. The ideal digital resource should retain its server logs, and make them available to their funding agency and researchers, subject to confidentiality agreements

During our research we found that it could be relatively difficult to obtain log data, even from large publicly funded portals. Humbul was reluctant to allow us to use their data, even if anonymised, because of worries that individual users might be identifiable, because of their personalisation features. We were able to reassure them that this is not possible, and that any individual machine IP addresses would not be made public in any reports. However, the time taken to do the anonymisation held up our research considerably. Artefact were willing to give us the data, but had not had the technical support to be able to keep it, and what was kept was lacking in detail. Thus we were able only to access a small amount of data.

Many individual projects may be even less likely to realise the importance that their web logs may have as a potential research resource. They may not realise that they should be kept, nor the level of detail of logging that should be made possible, they may also lack technical support to do so. We therefore recommended to the AHRC that if resources were publicly funded they should be asked to keep logs and that as a function of the grant such logs should be made available to researchers for the purposes of monitoring and evaluation. This would avoid the kind of delays we experienced while permissions were negotiated. The ISE server logs have been retained and are made available. We hope to be able to analyse them in detail as part of the next phase of the LAIRAH research, if a funding application is successful.

3.1.4. The ideal digital resource should keep documentation and make it available from the project website, making clear the extent, provenance and selection methods of materials for the resource

The participants at our workshop were concerned that in many cases they could not find enough information about the content of the resource, how it was selected, and its provenance. They also wished to know more about the team that constructed the project, and the expertise of its members, and some of the more technically expert participants would have liked to have found out more about the technical methods and standards applied. They also felt the lack of the kind of information about sources that are found in the print world in citations and bibliography. All of this meta information helps to increase the trust that users have in the quality of digital resources.

However, in our study of even well used projects we found that levels of documentation were extremely variable. Some projects were extremely well documented, these tended to be in subject areas like archaeology and linguistics, where documentation of resources has always been an essential research practice. However, many projects kept little or no organised documentation. It could also be hard to find. Ideally documentation should be easily located from the project website. However, in many cases it was absent, was accessible only through the AHDS, or not at all. In other cases, although some documentation could be found via the website, it was complex, and difficult to locate or incomprehensible to the non-expert reader. One of the most effectively documented resources had been compelled to do so in the terms of their grant from the New Opportunities Fund. We therefore recommended that the AHRC should consider making documentation a deliverable of any funded project.

The ISE site is relatively unusual in that it is extremely well documented and there is ample information available. Most of the information is available from the 'Academic divisions-Foyer', with links from SubjectArea- About ISE'. It is especially important that the 'About' link is available from the top menu, making it as easy as possible for users to access the documentation. The 'About' page is also kept relatively short, is expressed in simple terms and has links to further material. This is ideal and should be retained, since our research has found that users become confused if documentation is too dense, complex or presented on a long page which requires them to scroll. The documentation includes:

- History of the site (<http://ise.uvic.ca/Foyer/ISEoverview.html>)
- Editorial Guidelines
- Details of people on Advisory Boards for different sections [Editorial Board, Advisory board Performance materials, Theatre History and Technical Design and Implementation]
- Details of editors of the plays and poems
- Technical information about the design of the site.
- Information about new site

3.2 Users

3.2.1 The ideal digital resource should have a clear idea of whom the expected users might be; consult them as soon as possible and maintain contact throughout the project via a dedicated email list or website feedback

Very few of the projects that we studied had any contact with their users, nor did they tend to consult them or provide much user interaction on the website, beyond a ‘contact us’ email link. This is a wasted opportunity, since contact with users should help project teams understand the needs of those who will use the site, and adapt it accordingly. This should in turn increase levels of use of the site.

The ISE website states that their aim “is to inspire love of Shakespeare’s work in a world-wide audience”. It would seem that they expect to have a global impact. There is no further explicit indication of their expected users. However, their division of SubjectArea and Academic would seem to suggest that academic users are expected, although the site is welcoming for non-experts, since it gives detailed descriptions of the material it contains and how this might be used. Contact with users is achieved through a discussion section and the provision of contact email links.

3.2.1.1 Discussion [<http://ise.uvic.ca/Annex/discussion.html>]

This page informs users that ‘When complete, this section of the site will provide an informal forum for the discussion of Shakespeare, his works, life, and the performance of his plays.’ The discussion section will be launched in April 2007, and should provide an excellent opportunity for users to interact with each other and the site’s creators. It should also be noted, however, that such forums tend to be labour intensive to keep updated. We have found that users distrust the quality of a site if there is evidence that it is not entirely up to date. Thus, once the discussion section is launched, sufficient resources will need to be allocated to it to ensure that it does not appear outdated.

3.2.1.2 Contact email links

An email contact address is linked to from the following pages:

- About [<http://ise.uvic.ca/Foyer/about.html>]
- Policy on copyright [<http://ise.uvic.ca/Foyer/copyright.html>]
- Guidelines for the acquisition and copyright of performance materials [<http://ise.uvic.ca/Foyer/PerfGuide.html>]
- Shakespeare in performance –FAQ [<http://ise.uvic.ca/Theater/sip/faq.html>]
- About Shakespeare in performance [<http://ise.uvic.ca/Theater/sip/about.html>]

Each contact link is placed within very different contexts and is used for different types of information, thus it may be that the addition of an overall ‘contact us’ link on the top menu would be beneficial for users.

3.2.2 The ideal digital resource should carry out formal user surveys and software and interface tests and integrate the results into the project design

Once again few of even the well used resources in our survey had carried out any kind of formal user testing. One project subsequently regretted this, since it had worked very hard to produce a complex search interface, only to find that in practice it was too complex for the majority of their users.

The ISE carried user testing before the launch of the new design of the site in November 2005. The sample was of about 15 participants, and designed to represent the needs of different user groups. It included students at different levels, English faculty of various ages, skilled computer personnel with no great knowledge of Shakespeare, and several general readers. The results were used to aid the design of the navigation, both to encourage initial entry to the website, and to navigate within the site. ISE made a significant number of modifications as a result of the testing. This testing represents good practice in resource design, and makes ISE relatively unusual in the field of digital humanities resources.

Positive feedback from students and teachers who have used ISE has also been placed the website at <http://ise.uvic.ca/Foyer/corporate.html>. This shows that users have found the contents helpful in their work. The

site has also been given various awards for excellence from internet bodies and those concerned with academic study in general and English literature in particular.

3.2.3 The ideal digital resource should be designed for a wide variety of users, and include information to help the non-expert to understand the resource and use its contents

At the workshop participants thought that many resources appeared only to be designed for subject experts, and therefore deterred the more general user. They argued that the inclusion of simple instructions would be very helpful for the non-expert, and would not affect the experience of the expert user. This proved to be important, since the participants quickly gave up trying to use a website if they were unable to work out how it should be used. Simple, clear signposting should therefore help to increase levels of use of digital resources, since it encourage non-experts to persist with user of the site.

The ISE website seems to be designed for a wide variety of users. A large section dedicated to Shakespeare's life and times (<http://ise.uvic.ca/Library/SLT/intro/introsubj.html>) seems to cater for the novice. Whilst Scholarly Articles on Shakespeare and the Internet (<http://ise.uvic.ca/Annex/Articles/index.html>) appear to be directed at the Shakespeare scholar.

Access to the main site is achieved by clicking on the image of the library which makes up most of the top page. The visual metaphor is appealing in many ways, and undoubtedly attractive, and the ISE team may not wish to spoil it with instructions for use. However, however it may not be evident to all users that they should click this image and our research shows that users are quick to give up on using a resource if they do not find obvious clues about how to use it. In many cases such instructions were not provided by the project team, as the use of the resource may have seemed entirely obvious to its producers. The ISE are planning to address this potential difficulty by creating a more obvious link to their newsletter page- (see discussion below in section 3.4.2)

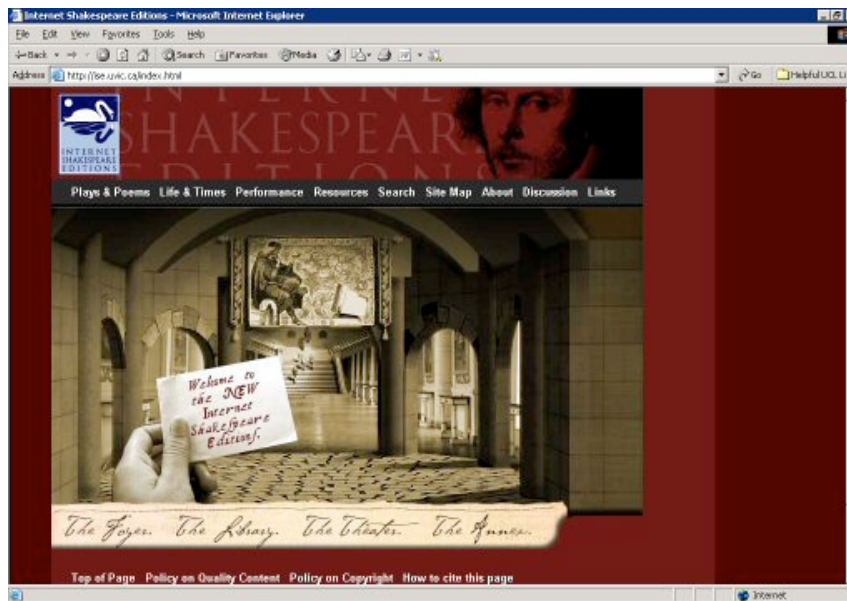


Figure 1: The Top page of the ISE website

Navigation is described in the 'How to use this site' page of the Foyer section. This contains a great deal of very useful information about the contents of the site, who created it, the type of material included, its provenance and extent. This is also easily located by following links from the page. This is vital since this is the kind of information which encourages users to trust the quality of a digital resource. The information provided by ISE should be more than sufficient to reassure users of its high academic standards.

3.3 Management

3.3.1 The ideal digital resource should have access to good technical support, ideally from a centre of excellence in digital humanities

It was not surprising to find that many of the well used projects were associated with centres of excellence in digital humanities. The Humanities Research Institute at the University of Sheffield for example was the base for

several projects whose use was prominent in the log data. This is understandable, since it is difficult for individual humanities researchers to keep up with the latest developments in digital techniques and technical standards. Thus it is vital for researchers to have access at least to a computer support officer, and ideally to such a centre, whose staff will understand not only technical aspects of resource construction, but also the demands of humanities research.

The ISE is based at the Humanities Computing and Media Centre at the University of Victoria in Canada (UVic) and thus has access to a high level of technical expertise and advice. There is also an advisory board in Technical Design and Implementation (<http://ise.uvic.ca/Foyer/techboard.html>). The page includes names and details of the four members. Between them they have both technical and digital humanities expertise. This is an ideal arrangement, since it gives the ISE access to the latest information about technical developments and good practice in digital humanities.

3.3.2 The ideal digital resource should recruit staff who have both subject expertise and knowledge of digital humanities techniques, then train them in other specialist techniques as necessary

The recruitment and training of staff to work on digital humanities resources was a particular challenge for the leaders of the projects whom we interviewed. It could be especially difficult to find staff who were not only technically adept, but also had sufficient knowledge of humanities research that they understood the material itself, and were thus able to mediate between the needs of researchers and technical functionality.

It was most usual for humanities specialists to be recruited, but they then needed to be trained in various computing techniques. This often proved difficult since the amount and quality of training available through universities was often disappointing. PIs also commented that training new researchers often took longer than expected, which could be a significant problem, when the project was operating on time-limited funding.

The ISE has obviously been able to recruit good project staff. The site lists all research assistants (undergraduate and graduate), from 1992 to the present day. Most have subject expertise and/or digital humanities knowledge, plus other areas of expertise depending on their function. The ISE is also very well provided with academic members, editors and advisors. There is one Editorial Board and three Advisory Boards for Performance Material, Theatre History and Technical Design and Implementation. There is also detailed information about the editors of the online editions. This is important, since detailed information about the academic qualifications and technical expertise of the project team helps to reassure users that the material to be found on the site is of the highest academic standards. It is also important that the ISE list the institutional affiliations of board members, since such affiliations appear to act in a similar way to the trusted brand status of commercial sites, such as the BBC for news resources. Once again they help users trust the quality of the resources to be found.

3.3.3 The ideal digital resource should have access to short term funds to allow to retain expert staff between projects

A further problem where staffing was concerned was that in the UK most non-commercial digital humanities projects are made possible by short term grants of public money, usually from the AHRC. This funding is relatively scarce and to it is very difficult for projects to obtain continuous funding, and retain skilled staff. This resulted in wasted resources, since new staff had to be appointed and trained for each new tranche of funding granted, rather than PIs being able to rely on a cadre of expert employees, as is more often the case with scientific funding. We therefore suggested that the AHRC might consider making available small amounts of short term funding, to allow employees to be retained for a few months in the hope of securing further long term funding, as is the practice with some UK science funding councils.

The ISE is relatively fortunate in this regard, in that the Canadian funding system appears to make it easier to access small amounts of grant money on a continuing basis, both from universities themselves, and from public funding. The uninterrupted recruitment of research assistants noted on the site suggests continuous availability of funding. The University of Victoria, The Social Sciences and Humanities Research Council of Canada and the Innovation Development Corporation are listed as 'supporters' (<http://ise.uvic.ca/Foyer/acknowledge.html>). This suggests ongoing access to funding to develop the resource. This is ideal, but rare outside North America, and it is to be hoped that such funding will continue to be available to the ISE.

3.4 Dissemination

3.4.1 The ideal digital resource should have an attractive usable interface, from which all material for the project may be accessed without the need to download further data or software

The need to have an interface that is attractive and usable may seem too obvious for any need for comment. However, workshop participants found that many of the interfaces to the resources in the sample, even well used ones, were problematic. This may be because very few projects had any contact with experts in HCI, or interface design. It is possible to apply for funding for a professionally designed site, but none of the projects in our sample had done so. As a result participants found most unattractive compared with the professional interfaces of commercially produced resources. This is significant, given that it appears that most users make decisions about websites extremely quickly [8], and so an unwelcoming interface is likely to deter many users before they have even accessed the resource's contents.

We also found that several projects, especially databases for historical research, required users to register to use the data, for which they had to be given a password before they were allowed access. Data would then have to be downloaded and used with specialist software. Such registration is sometimes unavoidable, for example for reasons of copyright. However, it was a serious deterrent, for all but the most determined users, and thus should be avoided if at all possible.

The user studies performed by the ISE have helped the team to develop the interface and navigation to help users find their way around the site. Although some users may find the visual metaphor a little confusing, in general the interface is attractive and easy to use. The site is extensive and complex, with a large amount of material, which by nature will mean that the first time user will need to spend some time exploring to find what they need. The different sections are generally well signposted however, and explanations are provided about what kind of content may be found in each section. The pages are clear and well-written, and should be easily comprehensible by web users. This is important, since users of the web tend to skim pages, and take in less content than if they were reading printed material. Pages therefore need to be concise, divide into easily comprehended sections, and be written in a clear and accessible style [9]. All of the data needed may also be accessed without need for further software or to download the data for local use.

3.4.2 The ideal digital resource should maintain and actively update the interface, content and functionality of the resources, and not simply archive it with AHDS

As discussed above, it is important that web sites should be updated regularly. Now that many commercial sites are updated constantly, users have an expectation of currency, and our research has shown that they may therefore distrust the quality of resources that appear not to be actively updated.

Some of the ISE pages contain information about when the site was updated. There is also a detailed description explaining how ISE has been created, updated and what ideas there are for the future. (<http://ise.uvic.ca/Foyer/ISEoverview.html>). In fact there is an active policy of updating the contents of the ISE site. A full-time student updates content in the database of Shakespeare in Performance: this is usually done daily. She also checks the links regularly. A minor update of the Life and Times section (mainly the bibliographies) is planned for April 2007. The texts are updated as they are completed, but this section of the site is still under construction as the ISE team are looking at various ways of displaying annotations and textual variants.

Our study showed that most scholarly websites can learn from the commercial sector when it comes to providing information about how and when their site is updated. Evidently, for a site such as ISE, there is no need continually to update all pages, however practice in providing such information should be consistent throughout the site. Another way to deal with this is to provide a link to news about the site, and provide information about when new content is added. Some projects use the front page for such updates (<http://www.ucl.ac.uk/english-usage/>), however another approach is to link from the front page to a news, or what's new page (for example <http://ahds.ac.uk/>). An RSS feed such as that used by the AHDS is often used commercially to encourage users to revisit sites of interest and could also be used if significant numbers of changes are being made. All of these measures reassure users that updating is happening. The ISE plan to introduce a regular newsletter, the first issue is being prepared for the end of April 2007 and the front page will have a hand that invites the user to link to the newsletter rather than simply providing a welcome page. They expect the newsletter to be a regular feature, issued three or four times a year, and plan to send it to a large readership base of libraries and English

Departments, who it is hoped will create links to the site as a response. They also plan to use RSS feeds to automate the provision of information about page updating.

3.4.2.1 Maintenance

Maintenance is a problematic issue for non-commercial digital humanities resources, since after funding runs out, there may be no resources to make sure that the resource is maintained. Although a recent funding call from the UK's JISC (Joint Information Systems Committee) requires universities to guarantee that they will maintain funded resources for at least ten years [10] this involves a commitment of server space and personnel to do so, a cost which the institution may not feel able to bear in the long term. There can also be the danger that if a member of staff leaves or retires the university may not feel obliged to maintain the resource, and thus, in the worst case, it could be entirely lost. It is also clear that simply leaving data on a server without active maintenance and updating is not satisfactory. One project in our survey was no longer updated or maintained, and the original researcher who created it was aware that not only was the website seriously outdated, but the functionality of the database itself was gradually deteriorating. No-one was paid to maintain the resource, however, or had time to do so voluntarily, and thus only ten years after its construction it was becoming unusable.

The Humanities Computing and Media Centre at UVic, runs the ISE server. The whole system is, however, backed up automatically, off site, by the University Computing and System Services who also perform basic system-level maintenance. This ensures that the data is safely maintained at present, and the ISE are currently negotiating with UVic for continuing support for infrastructure. The ISE is constituted as an independent, non-profit organisation, therefore, it could if necessary exist independently of the university, and be moved to a different server. However it would be ideal if UVic were able to commit themselves to long term maintenance of the data.

In the UK all research that creates digital output, and is funded by the AHRC, must be offered for archiving with the AHDS, which preserves the data, although it does not, of course update it, or maintain a website. However, this option is not available in Canada, and thus individual projects and their host institutions must negotiate such archiving on a piecemeal basis. For example, ISE archive all artefacts for the database at 600dpi TIFF files. All other files are handled by a version control system (Subversion) which keeps track of all changes. This is good practice individually, however without a central service like the AHDS to offer archiving facilities and advice about good practice, many projects may not be aware of the standards to which they should adhere, and thus their maintenance strategy might not be as rigorous. This piecemeal approach is therefore not ideal for digital resources, and at worst potentially poses a very serious threat to their long-term sustainability.

3.4.3 The ideal digital resource should Disseminate information about itself widely, both within its own subject domain and in digital humanities

The strongest possible correlation in our study between a characteristic of a resource and its use was dissemination. All the projects in our study had worked hard to provide information about their work, by giving papers and seminars in both the digital humanities and publishing sectors, and within their own subject areas. This is an important new role for academics, since previously they would have written books, and relied on publishers to market them. In the case of a digital resource, the scholar is now the publisher, and so the responsibility of disseminating information about their work not falls to them.

The ISE has a good level of web visibility. A simple link analysis shows over 5,000 links to any page in <http://ise.uvic.ca>. Publications and papers given as a result of ISE research are also listed in the annex there on a page entitled: 'Scholarly Articles on Shakespeare and the Internet' (<http://ise.uvic.ca/Annex/Articles/index.html>). This shows that the ISE members have been active in disseminating information about their research and the project itself. These include both conferences and journals in English literature and conferences on Humanities computing, although papers do not appear to have been published in any humanities computing journals. The website also cites an example of use of ISE:

*"An idea I discussed at a meeting of the Shakespeare Association of America three years ago, that ambiguous readings and imprecise entrances or exits could be indicated by animation, has been received with a possibly surprising enthusiasm by the editing community in Shakespeare studies:
<http://ise.uvic.ca/Annex/Articles/SAA2002/rich4.html>"*

4 Conclusions

This paper has shown how the findings of our research on the LAIRAH project have been used to construct a check-list of recommendations. We have further shown how such recommendations may be applied in the evaluation of an example digital humanities resource.

The Internet Shakespeare Editions project is an example of excellent practice in the construction of digital humanities resources. It maintains consistently high standards both of content, presentation and technical web design. This evaluation shows that the ISE performs very well when judged according to the recommendations made in the LAIRAH checklist. In many aspects it out performs many of the well used resources in the LAIRAH research sample.

It is an attractive, usable resource, with a wealth of useful content, which is comprehensively documented. It is able to maintain levels of funding, which allow it to recruit able research staff, and it is well supported by a humanities computing centre, by expert editors and well qualified advisory boards. All of these factors help to ensure that users will recognise the content as trustworthy and of good quality. It is also clear that information about the resource is widely disseminated, both in digital humanities and English literature. The resource is actively updated and should continue to be maintained by the University of Victoria. Like all digital resources, especially those where no national archiving system exists, it will inevitably face problems of long term sustainability. However, the team is aware of these, and is taking steps to try to ensure the resource's future.

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