Strategic Content Alliance

building bridges to e-content

# Audience Analysis and Modelling

## Strategic Content Alliance
## Work Package One, Final Report


JISC, British Library, BBC, National Health Service, Becta, MLA and National e-Science Centre working together to fully realise the potential of e-content for all users. For more information on the Strategic Content Alliance, please visit:

**www.jisc.ac.uk/contentalliance**

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This report is available in alternative formats which can be found at: **www.jisc.ac.uk/contentalliance**

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# 1. Introduction

## What is the Strategic Content Alliance?

The Strategic Content Alliance (SCA) is a consortium of seven major organisations 'working across the public sector to realise fully the potential of e-content for all users through the integration of services and technologies and the removal of political administrative barriers' (Vision Statement, Project Initiation Document). The Joint Information Systems Committee (JISC), the lead sponsor, is the major funder, but all sponsors have made a financial contribution to support a project that is designed to demonstrate the SCA vision.

The project is a 24-month programme with a small team based at the JISC and supported by consultants, the knowledge of all the sponsors and, of course, the wider resources of the JISC. The project's purpose is to produce a convincing demonstration of the value of providing access to the widest range of high quality content for as many people as possible. It will also provide guidance on how new approaches could be sustained and developed in the future.

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Understanding audiences, their needs and behaviours is at the heart of the project. Mechanisms to aggregate content from different sources must be capable of dealing with and responding to the many different needs that each individual has, for example multiple communities of interest with different levels of understanding in each – the research physicist who is a steam engine fanatic, the working mum who wants to research early English women writers. The SCA seeks to know more about what organisations know about their online audiences, how that knowledge influences development plans and how these outcomes are measured. (More information about the SCA can be found at **www.jisc.ac.uk/contentalliance**.)

# Audiences and Evaluation: Scope of Work Package One

*The SCA must provide compelling evidence of the value of content aggregation and discovery across organisational boundaries…*

The 'audiences and evaluation' component of the SCA work focuses on the 'downstream' delivery of relevant content to users. The SCA must provide compelling evidence of the value of content aggregation and discovery across organisational boundaries, demonstrating increased convenience to the user. Only with good, practical evidence will it be possible to win the hearts and minds of others, whether e-content holders, policy makers or politicians. Knowledge gathered from the sponsors will be used to see how far audience characteristics and needs in sponsor organisations overlap and how their e-content can be disclosed and aggregated together to meet 'personal' user needs in cost-effective and scalable ways.

To achieve this the SCA needs:

1. A good understanding of sponsors' knowledge of their audiences and how they currently assess the impact of e-content delivery on those audiences, plus any plans that sponsors have for future audience analysis or evaluation
2. A review of approaches to content presentation utilised by sponsor organisations (for example websites, the importance of public search engines, personalisation), any developments planned especially using personalisation tools such as Virtual Learning Environments (VLEs) or social networking, and sponsors' knowledge of other relevant activity in the area of content presentation
3. From an assessment of outcome/impact methodologies, the recommendation of a strategy for assessing the performance of any new SCA service against existing search tools

For the progress and outcomes of the wider SCA programme, this work should produce a shared understanding among the sponsors of what constitutes 'added-value' and how it can be demonstrated. Most of all it must strive to deliver objective and replicable evidence of the benefits of 'the SCA approach' over existing discovery tools. This suggests the importance of identifying some characteristics of audiences relevant to all of the sponsors (in the way that 'personas' are developed for web usability testing) so that a limited number of search scenarios can be constructed to show the public value of e-content aggregation. Practical and clear models will be vital to support future advocacy.

# Work Package One's Specified Deliverables

| Work package one actions | Deliverables/outcomes |
|---|---|
| 1. Sponsor audience mapping and the creation of a common knowledge base on audience characteristics:<br>■ Establish clearly what sponsors already know about their audiences and future priorities<br>■ Develop a matrix of shared audience characteristics to match content needs | 1. Common understanding across the sponsors of the importance of audience research, together with a draft set of shared characteristics (for example, age, institutional affiliation, location, ethnic origin, type of learner, socio-economic group, knowledge of subject area, learning style). Such a characteristics list might aid individual service planning, but would facilitate assessment of audience overlap across institutions and thus the coordination of developments |
| 2. Catalogue relevant presentation layers and identify any work undertaken to show how they attract and engage new audiences:<br>■ How do sponsors provide access to their content (portal, bespoke front end, website, etc.); what baseline information exists on use?<br>■ What do sponsors know about approaches to personalisation? What has worked, and what has not worked? What is planned? What knowledge is there about other organisations (citations and references if possible)? | 2. Input into Work Package Six the baseline information on presentation/personalisation layers already in use or under development<br>3. Commitment by sponsors to the value of personalised access |
| 3. Impact assessment:<br>■ Agree scenarios to test on access models<br>■ Review approaches to impact assessment<br>■ Design and agree impact assessment process | 4. Recommended methodology for the evaluation of search strategies. The methodology should make it possible to compare the hit rates from different search strategies and also assess use views on the performance of one strategy against another<br>5. Set of search scenarios relevant to the sponsors' services that will highlight the value of cross-collection research harvesting |
| 4. Knowledge bank. Keep abreast of developing trends in the commercial sector in digitisation and audience trends; create a knowledge exchange:<br>■ Framework for internal and external documents<br>■ Landscape scanning | 6. Online resource of trends and current knowledge on digitisation and audience trends |

# Methodology for Work Package One

The major task in the actions above is the gathering of information from the SCA sponsors and from the wider landscape of audience and evaluation research, and in advance of that harvesting the outcomes would remain uncertain. Interviews, structured around three concepts – supply and demand, approaches to discovery, and evaluation – were therefore initiated in parallel with the desk research process.

# Audiences and Evaluation: Desk-Based Research

The major element of the desk-based research was a review of web resources. The reason for this is the rapidly changing landscape and language of audience analysis and evaluation. While it is possible now to see patterns in the techniques and standards that enable the interoperation of digital resources across repositories from description to disclosure, at the point of discovery by the user, the consistency of approach to audience description and the categorisation of types and levels of need and approaches are at best nascent or, more likely, no more than a twinkle in the eye! In relation to evaluation, the same points can be made with even greater conviction. None of this can be particularly unexpected.

The main drivers for the public sector (notably in education, research, cultural heritage and social information) have been the consistent description, management and disclosure of knowledge-based objects (the digital lifecycle). Elsewhere, frequently the content management issues have been less significant and the overwhelming influence of the web as a place of commerce and trading means that quantity of use – visits to sites and presumably sales made – has dominated. Again, that cannot be particularly unexpected since traditionally many public sector services have not placed great emphasis on quantity of use and anyway, the way that the web operates means that while metrics of hits is a simple thing to measure, finding out what is the benefit to the user is far harder and much more expensive to achieve.

So, while the desk-based research can offer a rich and varied range of approaches and techniques, almost none of those approaches can really be seen as the foundation for a set of guidelines or even a standard that would fit with the needs and resources of the SCA sponsoring organisations. As will be seen later in this report, there are examples of activities that have arisen during the interview stage that the SCA should consider using at least as a tool of peer review, where, if there is adequate support from the sponsors, further work might be done to test out the approach or method with the intent, if successful, of urging others to follow.

The application of keywords to public search engines and to social tagging sites produced four-figure hits as a minimum and eight-figure hits in some cases. Keywords such as ‘audiences’, ‘usability’, ‘testing’, ‘personalisation’, ‘evaluation’, ‘public value’ and ‘lifelong learning’ produce routes into a wide range of topics, but there was little consistency to be found.

However, on a more positive note, useful material was discovered that would help to focus the views of sponsors and others. For example, Jakob Neilsen’s Alertbox website (**www.useit.com**) is an excellent source of current opinions and developments in web usability. Alan Cooper, who wrote the book *The Lunatics are Running the Asylum* which argues a new approach to online product design (Interaction Design) that replaces the freedom of program engineers to design with user personas as a basis for design and testing, has a website promoting his company (**www.cooper.com**) but with some useful free stuff on the design approach. Much of the other relevant material discovered turned out to be reports and projects in the ownership of the JISC and the work done through

the Presentation Programme that has just ended (www.jisc.ac.uk/whatwedo/programmes/programme_presentation). The reports on personalisation and on usability (see Resources Directory) provide building blocks for the work of the SCA: the former report is now being taken forward in the Resource Discovery Programme and the latter is being developed to be included in all future JISC project guidelines.

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Of material that focuses on the supply/demand chain more directly there are three items that must be mentioned. One of the earliest pieces of work was done by Alice Grant for the Digital Cultural Content Forum in 2003 and analysed the audience categories used in a range of different digitisation programmes to see whether it would be possible to produce a set of common characteristics (www.culturalcontentforum.org/publications/audience/audience_analysis.pdf). These were provided as part of the documentation sent to sponsors prior to interviews being undertaken. The second item is work being undertaken by the US Department of Agriculture that analyses the 11 main user groups/types of Department of Agriculture services, provides a 'persona' for each type based on the evidence and then indicates their preparedness to use electronic services based around the needs of the persona (www.usa.gov/webcontent/documents/USDA_Audience_Analysis.pdf). The attraction is not that it provides a complete solution to adopt, but that it shows that it is possible to chunk audiences and produce useful categories, all presented in an accessible way. Other information on US government activity on audiences can be found on the Webcontent.gov site (www.usa.gov/webcontent/improving/evaluating/audience.shtml). Finally, the National Information Standards Organisation (NISO) standard Z39.93 – the Standardised Usage Statistics Harvesting Initiative (SUSHI) protocol – provides a framework for automatic analysis of library management system resource activity that could be relevant to a range of library-based services, not necessarily an approach that will change how web analytics are used, but in an environment such as the SCA where data on resources is moving across systems it offers a means of counting the traffic flows more 'automatically' (www.niso.org/standards/standard_detail.cfm?std_id=817).

### To summarise the conclusions of the short desk-based research activity:

- There is a considerable body of resources related to the evaluation of web services and usability testing, but much of it is based around the design of new web resources for commercial activity and the design of scholarly services
- The innovations in interface design and new 'personal' presentation systems are mainly being driven by online shopping and trading
- JISC has produced a very significant body of research and evidence about the underpinning architecture of the web and how services might be presented in new, innovative ways, but there is little evidence of embedding any of this work into JISC's programmes or the work of others. Much could be done to make it more visible

- There is work going on in relation to categorisation through NISO SUSHI and also the Department of Agriculture in the US but compared to the effort that is being invested in technical standards and work to manage and disclose digital library collections it is relatively small
- There is nobody owning the concept of the audience as a component in the delivery system
- Discovery focuses very much on developments in Web 2.0
- Evaluation still focuses very much on counting things. The concept of public value is not well understood in relation to the delivery of traditional services and that situation is magnified in relation to the evaluation of public sector resources on the web

# 2. Summary of the Interview Process

While each of the interviewees was provided with the questionnaire in advance of the interview each of the interviews was very different. The diversity of evidence that quickly emerged from the desk research highlighted that the study of 'online' audiences and the evaluation of services are at a much earlier stage of maturity than, for example, the emerging convergence of technical standards for content description and presentation.

*One of the key conclusions from this work package must therefore be the importance of the main SCA Board…*

While this might have been an obvious expectation, the process of discussion made explicit the differences between the seven SCA sponsors in their missions, priorities, roles and levels of understanding. Given that the desk research tends to re-enforce the nascent nature of audience and evaluation studies, one of the key conclusions from this work package must therefore be the importance of the main SCA Board considering, in the light of evidence provided in this report, how far they are able and wish to seek a genuinely shared approach to audience analysis in support of the SCA mission. Furthermore, will the sponsors commit to using a common methodology for service evaluation, at least to the extent of the creation of any SCA demonstrator?

What follows in this section summarises as fully as possible the facts and views reported during the interviews. These were conducted using a short questionnaire divided into sections dealing with audience analysis, resource discovery and service evaluation. With the exception of one interview, the approach taken was to record the discussion, then to produce an edited transcript following the interview which, whenever possible, was provided to the interviewee for their 'sign off', picking up any errors or omissions. The summaries have been extracted from the transcripts and edited to pull together the key issues.

# 3. Interviews

## British Broadcasting Corporation

| Interviewee |
| --- |
| George Wright, Executive Director of Future Media Technology (15 January 2008) |

### Audiences

The BBC clearly has a wide and long history of audience analysis and also good examples of the evaluation of new service developments. It is a major creator and distributor of content and is now exploring a range of new delivery platforms. The team that George Wright is currently building has a mandate to 'fast track' innovative technology projects. While the BBC has a responsibility to service every citizen, within the 12 top priorities set across the organisation each year some key target audiences will be identified. Recent examples of these include retired people and the parents of pre-school children. Each part of the BBC has its own audience and research team so that targeting can be effective; however effort is made to try to ensure integration across the various media and forms. The Olympics will be resident in the 12 top priorities for the next four years.

Online supports the main broadcast product, but the future media team work on big ideas that can influence the whole organisation. Services aimed at specific target audiences include the BBC Gaelic Service, JAM (discontinued due to concerns about 'public value') and the very successful range of language learning resources for minority communities. Successful online developments for wider audiences include postcode-related weather forecasts, iCAN and the iPlayer.

### Discovery

The BBC is a very large and open organisation that reaches all parts of the UK through the Nations and Regions teams; however, the BBC website at present focuses almost exclusively on BBC output and services and has not produced content integration with the output of other organisations, although the Open Archive and Creative Archive are examples of how this tradition is changing. BBC

resources are now being disclosed through Web 2.0 services such as Last.FM and Facebook and using RSS feeds. There a BBC presence on YouTube, although Six Music is seen as being more at the cutting edge of new resources, where Twitters can be automatically posted. The BBC Learning Department is exploring the use of VLEs. It is important to distinguish between mediated and unmediated access routes and it must not be forgotten that radio output continues to be more popular than the internet.

### Future watching

The Marketing and Communications team monitors audience and technological changes and currently Internet Protocol Television (IPTV) is seen as an important technology over the next five-year period. The speed of change is also being recognised more (hence the creation of George Wright's team) as exemplified by the rapid audience switch from MySpace to Facebook. There will continue to be changes in device access and it is important to focus on trends in audience access methods rather than solely on dealing with the demands of the technology. In relation to service personalisation, thought needs to be given to the balance between web services and websites. While the BBC beta homepage has some flexibility in it with regard to what and how information is displayed, the decision has been taken that the news feed must always be available. It would be possible for the BBC to act as a broker providing routes into other people's collections with a single authentication process, eg OpenID (**www.openid.net**). The problem is complicated at present given that the BBC has 150 separate sites. George Wright talked about 'hammocking' – a strategy of programming that 'hangs' between very popular products and more challenging material; there is an opportunity to replicate this digitally so that people can follow routes to material that they missed or were not aware of that will be of interest to them.

*…thought needs to be given to the balance between web services and websites*

### Evaluation, outcomes and interaction design

The BBC uses Nielsen/NetRatings and has decided not to use Google Analytics. There are web tracking services and the quantification of traffic flows. In relation to the broader concept of the assessment of developments through the BBC Public Value Test, the test is not retrospective so that the evaluation principles now in place for developments are different from those used previously. The BBC has been better in the past at efficiency of delivery rather than the impact and outcomes. The TeleTubbies and CBeebies sites have been evaluated to identify outcomes and the same is true of the World Service and BBC Learning. Outcomes evaluation does not work so well on general services.

With regard to the design of services, the new beta test homepage was put up for public assessment recently. I asked how this compared with the previous process of homepage design in 2002 that is described well in The Glass Wall (**www.liamdelahunty.com/blog/media/theglasswall.pdf**). The process that was described fitted the 'design, test on users, refine and test again' approach. The mission of the BBC website is to increase the availability of BBC services. The overall approach is to follow closely relevant standards to ensure that whatever the content and whatever the platform there is maximum interoperability. It is really important to try things out to see whether they will be effective and relevant. That is one reason why

the new 'fast track' team is so important. Personas are widely used. These change all of the time; in the past the digital refusenik was a priority, but now they have all bought Macs!

Finally there is an approach named 'Going beyond the Grid' – in the future it will be necessary to consider all routes to discovery. The electronic programme guides (BBC and others) are at present not very effective and a project called Pandora that is building a huge library of previously broadcast content is being assessed as a means of enabling people to discover new stuff. Electronic programme guides will be important discovery tools. TiVo demonstrated how intelligent profiling can help to produce better access and discovery.

## Becta

It was not possible to interview Becta representatives due to staff changes and diary bookings.

## British Library

| Interviewees |
| --- |
| Richard Boulderstone, Director of e-Strategy |
| Adrian Arthur, Head of Web Services |

### Audiences

The British Library (BL) has stated clearly in its recent annual report and other documents who its key audiences are – researchers, learners and the general public – and digital services and developments reflect this. There is also a commitment to support librarians as professional colleagues. Within the researcher category there is a range of particular needs. For example the Business Intellectual Property Centre is very much audience driven, but that approach also shapes how the BL approaches the web and how it is presented. It is what has created the current homepage.

This was redesigned about a year ago from a very link-heavy homepage (needing to click to get anywhere) to having the search box centre-stage and far fewer links. This is based on the principle that the best way to find things is to use search. Any search aggregates the BL's four principle content repositories into a single set of hits. For any researcher search is the best way in. It is 'in your face' on the homepage. In addition, there is recognition that not everyone is search orientated; there are audiences for whom the goal is not targeted research. They come to the site to find something interesting. For example the learning site provides the chance to discover some nice stuff.

Understanding the user now shapes all that is done on the BL website. With the new homepage there was a lot of usability testing before going live to line it up with people's expectations. Usability is a key element of design and development and a programme of usability testing has been in place for four years. Any new initiative is tested with users and quite a bit is externally facilitated. The contractors have highly developed skills and it is tough to be objective when actually building the resources. It is easier for an external agent to report that users don't like the design. The timing of audience/user testing is being pushed earlier in the development process all of the time. This is partly for technical reasons since many decisions have to be made earlier when using content management systems rather than HTML. A number of stages are involved:

- To help the early decisions, paper testing may be done at the beginning since with new services it is often difficult for users to envisage what is intended
- For the homepage redesign a prototype was first tested – a working system, but string and glue to test proof of concept, to see whether people really did like it
- The answer was yes, so it moved forward to a working demonstrator but user involvement continued throughout the process. Some user attitudinal work was done on their perceptions of the previous homepage: vox pop experiences to feed into the project
- The fully designed, working pre-release version was also tested fully. Subsequently, there was a further test of the final version in a live environment. This involved quite a lot of money and more was invested in users and usability than in the technical development. It was worth it

The BL provided profiles for the testers to use and these include the general user. For example, one was a member of the public who is London-based and a gallery-goer; another is regionally based and unable to get to London much, so cannot visit the BL; a teacher was the basis for another profile. They were not fully worked up personas, although they have been used in the past. The development of the Collect Britain website (**www.collectbritain.co.uk**), for example, had a considerable amount of persona work. The BL is revising the Online Gallery (**www.bl.uk/onlinegallery/homepage.html**) at present and personas are being used for that work.

In the e-Strategy Team a key focus currently is to understand and respond to the research needs of the science, technology and medicine domains. There is considerable engagement with researchers within the biosciences to develop appropriate content and applications for them. A good example of this is UK PubMed Central (UKPMC) (**http://ukpmc.ac.uk**). Based on PubMed Central (PMC) (www.pubmedcentral.nih.gov), the US National Institutes of Health (**www.nih.gov**) free digital archive of biomedical and life sciences journal literature, UKPMC provides a stable, permanent and free-to-access online digital archive of full-text, peer-reviewed research publications. UKPMC is part of a network of PMC International (PMCI) (**www.pubmedcentral.nih.gov/about/pmci.html**) repositories. PMCI is a collaborative effort between the US National Library of Medicine (**www.nlm.nih.gov**), the publishers whose journal content makes up the PMC archive, and organisations in other countries that share the National Library of Medicine's interest in archiving life sciences literature.

UKPMC is fully searchable and will provide context-sensitive links to other online resources, such as gene and chemical compound databases. Currently all documents in UKPMC are linked to databases hosted by the National Center for Biotechnology Information (NCBI) (**www.ncbi.nlm.nih.gov**) at the US National Institutes of Health. Over time, however, the BL plans to provide additional links to resources hosted in the UK and Europe which are of interest to the UK biomedical research community. In addition to mirroring PMC, UKPMC also provides a manuscript submission system (**https://ukmss.mimas.ac.uk/ukmss**) to enable researchers, funded by the UKPMC Funders Group (**http://ukpmc.ac.uk/ppmc-localhtml/funders.html**), to deposit articles that have been accepted for publication in a peer-reviewed journal. As of January 2007, this system holds details of around 15,000 grants awarded to over 8,000 researchers. UKPMC is led by the BL with nine other funding partners.

*As to whether this model could be translated to other disciplines, it is always dangerous to go too wide in the scope of a product, especially when it has not been handed over for beta testing*

Focusing on researchers' needs more broadly, the BL is collaborating with Microsoft in the creation of a new product called the Research Information Centre (RIC). RIC will be a collaborative tool that enables a research team to collect and manage all the documents and datasets they need for a project. The resources available will be drawn from the BL collections as well as other places. Microsoft has undertaken all the design (building on Sharepoint) and the BL will do all the testing. RIC would be available to research teams through a browser. Team members might have different levels of access and resources would be organised around different stages of the research project: ideas formulation, proposals, team building, experimental design, funding, etc. Prototyping will focus on biomedicine initially. As to whether this model could be translated to other disciplines, it is always dangerous to go too wide in the scope of a product, especially when it has not been handed over for beta testing. Trying to apply it too widely could be overwhelming. 'With biomedicine we can go and talk to people and see what they want and how it works.' The BL's role is very much to understand and respond to the needs of the end-users. RIC should connect up with UKPMC. Research datasets are also a 'hot topic' currently and the BL has their use as a high priority. A key task will be the creation of a catalogue of datasets to help those developing new ideas to find existing relevant datasets without difficulty. One approach could be to harvest existing metadata from the research sector.

Audience segmentation work does go into strategy, but at a high level – undergraduates, postgraduates, academic staff. The primary market focus is higher education, and increasing focus is being placed on small and medium enterprise sector development; the same is true of the creative industries. Priorities have not changed significantly. The information addresses more the profiling of the people using the services right now. It may change, but the BL puts as top priority serving the researcher. This has widened only a little – everyone can be a researcher – but they are not trying to reach everyone; there is a tendency to go back to academia and research communities. With regard to audience horizon scanning, Jill Finney has done some work on the Google generation. In the science, technology and medicine domains work is being done on surveying the use of datasets, with specific needs identified in the community. Will go out and commission work on BL role in providing datasets. A critical issue is how to set priorities based on the BL's

strengths. The national library could do anything, which suggests a broad remit, but to be effective in the delivery of outcomes there have to be clear priorities. Research Councils UK (RCUK) talk a lot about better public engagement and expect the BL to do it. Nobody can do everything but supporting the development and use of shared standards could be important. For this, wider consortia are vital. The BL states clearly who its audiences are and if others do the same this could help to set boundaries for action.

### Discovery

The BL has now established a Resource Discovery Programme Board. A lot of work is already taking place in this development area and also using Web 2.0 technologies. Quite a lot of this is the mundane 'grunt work' needed to evolve existing systems and services to meet better users' needs but the BL is purchasing an Ex Libris product (Primo – www.exlibrisgroup.com/category/PrimoOverview) that will act as a front end to the catalogue and enable users to interact much more with the resources, including adding comments, etc. The largest programme in place is the Digital Object Management (DOM) project that is designed to create a single repository for all digital assets. The order of development will be e-journals first, followed by audio materials and then all other digital assets. There remain questions about how resource discovery will work with such a wide range of different resource types from e-journals to web archiving. Resource discovery is expected to be a strand of the new Content Strategy.

Opening up the DOM to wider audiences has not been a priority for the BL. The main tasks have been to increase the digitisation of the collections for current audiences and increasing traffic has not driven developments, nor has finding ways to get other services to point at BL content. The BL has a leading position in the range of resources it has available to the research and academic sectors and the new Resource Discovery Programme Board represents the first real look at the future needs for accessibility to those collections.

In relation to embedding BL resources in other services, Microsoft is funding the book digitisation project and all of this material will end up on the digital library system (DOM). Access to all of the material produced by this project will be through the catalogue that will link to Portable Document Format files (PDFs) of the full documents. The PDFs will also be available on the BL website, but there are no plans yet for working with search engines such as Google to enable discovery through external services. In future it might prove worth while in specific areas. However, the key task is to generate more money to digitise more stuff. The BL has spent a lot of money but less than 1% of the collections have been completed. The top priority now is newspapers. Gale Cengage (http://gale.cengage.com) will host the BL newspaper content once digitised and there is interest from the newspaper industry in supporting more digitisation. Ancestry.com is another possible partner. There are a number of projects funded by the JISC and the BL has a responsibility to ensure that as funders JISC get the services and content that they want for students and academics. Other audiences don't matter so much; they should always get minimal access to the digital objects but they should expect low quality.

Quite a bit of work is being done on Web 2.0 developments. The BL view on it is that these kinds of services have always been there on the web but they and organisations like them haven't paid too much attention. To start with it was not very well developed and a bit geeky; also the Web 1.0 information and transactional processes have been very successful. BL website visits have increased from 1.3m to 6m without too much interactivity. However, Web 2.0 has now matured. Last year 20% of UK page views were of Bebo and Facebook, and YouTube is more popular than the BBC site. Wikipedia was the 20th most popular website in the UK last year. The public are used to this kind of interactivity. The question is, what is in Web 2.0 for the BL? There are three ways in which it is relevant.

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Lynne Brindley has picked it up strongly and said, 'just do it'. The Library has now 'mashed up' content with Google Earth, included user generated content in Turning the Pages, and set up some blogs and podcasts. These have been things that are easy to do, but how do they go beyond it in the new BL strategy? What does it mean for the library of the future?

The key thing is giving users the chance to participate in describing and interpreting the collections. People come to exhibitions and use the reading rooms, but the Library has been seen as a place where people come to look. But catalogue records, for example, are not always that accurate. Using Web 2.0 the opportunity exists to shift to an organisation that has the collection and can describe it, but recognises there are people out there who can add useful things also. This can supplement BL resources and there is an opportunity for the Library to do things that have never been done before. Ex Libris Primo is a major Web 2.0 development offering Amazon-type reviews and tags in the catalogue.

These techniques can cut across the full range of audiences, with specialist catalogues such as the Archival Sound Recordings, a JISC-funded project. The user community wants additional functionality, and the BL now plans to allow tagging by users, and also allow descriptive metadata to be enhanced with user comments, something that can be achieved relatively easily. A demo will be produced and the site user panel will be encouraged to explore the functionality in the first instance. As a JISC project this means the views of tertiary learners will be included. Some workshops to shape functionality and to build use are also planned. This will be a significant change in the culture of how people can engage with the resource.

Staff are looking at other areas of content to see if the same approach can be applied. Sound recordings are a fruitful area since listening gives the full experience to any listener. It is not the same with a digital version of a book at this stage, where moderation is still needed. The Powerhouse Museum (**www.powerhousemuseum.com**), which builds user communities around collections with Web 2.0, is highly interesting. The level of activity may not be great yet, but it adds value. Engagement is increased by working with users. The focus will be on material that has so far only received minimal cataloguing, getting users to help with catalogue enrichment and maybe other tasks.

The Online Gallery is being redeveloped particularly to take Collect Britain resources into one repository. It will be a single richer and deeper resource. People will then be able to add their comments about the objects as well as create their own showcases from the collections; there are 30,000 items and users can publish their own ten items from the collection. User generated showcases with links to Flickr could show comparisons between past and present.

At the Tate and the BBC there is a visible shift away from hermetically sealed websites. The plan is to open up content so it can be found on a variety of platforms. This provides the opportunity to get into the major Web 2.0 environments. The BL already has Facebook groups – the Business and Intellectual Property Centre has 1,000 members in its group, for example. It is possible to send invitations to events to group members, making Facebook a good marketing channel. There are BL videos on YouTube. In addition there is MySpace presence for the Avante Garde exhibition currently in the galleries. For the planned Ramayana exhibition there will be a link with Flickr to encourage people to submit images of Ramayana in performance. This will be on the web but images will also be filtered through to the live exhibition, blending the internal and the external together. The web affects the live exhibition creating new interactions. Exciting stuff!

*Emerging technologies may have a radical impact on how institutions like the BL deliver services, with new ways of presenting and describing content for audiences*

The third area of Web 2.0 engagement is rich media. Broadband makes it possible to podcast and videocast; Turning the Pages is broadband technology. How can the BL capitalise on the successes so far achieved? How can it exploit emerging technologies? Microsoft SeaDragon (http://labs.live.com/Seadragon.aspx) is a new interface technology that can blow up and link images in new environments. A video demonstration of SeaDragon can be found at www.ted.com/index.php/talks/view/id/129. In ten years people may interact with the web in totally different ways, maybe diving in and out of content sources using intuitive paths into content without search boxes. Emerging technologies may have a radical impact on how institutions like the BL deliver services, with new ways of presenting and describing content for audiences. The web will continue to change a great deal. Broadband makes possible visual and tactile-based technologies and once enabled providers will make them available and people will take them up. They will be much more intuitive than Google.

### Evaluation

The BL uses the standard feedback tools for user satisfaction and take up, but for qualitative evaluation the best technique has been to put a link on each page that asks ‘tell us what you think’. People do, and there have been very positive comments – ‘tears of joy at seeing treasures’. On the other hand Linux users also report their occasional dissatisfaction with tools used. Overall, soliciting comment at the point of use is good, especially if the content is inspirational or provocative. The BL has done a series of market research studies of the websites. These have included research users and library and information profession users and the Library also bought into a MORI poll to get a view of the users of the Online Gallery. This demonstrated that 60% of Online Gallery users are overseas.

For site logging Analog (www.analog.cx) is mainly used. This is freeware that goes through weblogs and does useful analysis. It cannot go to the level on individual journeys, but it does provide some idea of how people are travelling around. Google Analytics (www.google.com/analytics) is also used, but with some suspicion. Where data can be checked it seems to produce bizarre results, for example it suggests 60% of users are using Firefox! Google Analytics data can be indicative but may be skewed, and the BL cannot rely on it as much as the data from Analog. The Library also use Hitwise (www.hitwise.co.uk), which enables comparative views of particular marketplaces. Hitwise provides a sense of how the BL site grows against others in the market in popularity. There has been a big expansion in the past five years, but that is the same for others. The BL has vastly increased its e-content so would expect to be moving up through the field rather than just marking time.

To feed back these data into future strategy, the BL has a balanced score card and a set of Key Performance Indicators. These are updated once a month and website data feeds into both of them. Three of the indicators also form part of the funding agreement with the Department for Culture, Media and Sport. Regular reporting is therefore built into BL accountability. With regard to feeding back into actions arising from analysis of the data, the figures are monitored closely to see what works and what does not work. For example, in May 2007 there were a huge number of hits on an interactive site that was part of the Sacred exhibition: 20,000 hits in one month. Logs show that 18,000 hits came from the Web 2.0 site StumbleUpon (www.stumbleupon.com). Site creators need to be involved in and courting these sites to bring content to people's attention. The same is true of Wikipedia: some BL content is nicely and relevantly linked in and there are lots of referrals each month from Wikipedia. The links are put in by the Library's curators. The Sounds Familiar dialect sound recordings site (www.bl.uk/learning/langlit/sounds) is a good example of where the curator has put a link to the relevant recording page for each Wikipedia entry. A hundred people a month now visit from Wikipedia – a very good connection to make. On the other hand, with two copies of the Magna Carta the BL is the world leader on the subject and the Magna Carta website is thus a vital tool. Two years ago if you searched for Magna Carta on Google.com the BL would be at top of the list. Today the Wikipedia entry comes top of the list. Consequently usage of the Magna Carta site is down considerably. The Wikipedia page is not necessarily better or worse than the BL site and may be better for some to start with the tertiary source, but the BL has to accept that the site has fallen from the number one position. Web stats always go up, but while this can seem good, the critical thing is the value that people find from the service on the web. In the next financial year there will be a satisfaction measure of web resources through a regular online survey. This kind of satisfaction assessment is already done for document supply and for the reading rooms, but not so far for the web. It will help to enrich the attitudinal data that is currently poorly understood. It will probably be a ten-question questionnaire conducted once every three months.

# Joint Information Systems Committee

| Interviewees |
| --- |
| Lorraine Estelle, Chief Executive, JISC Collections |
| Charles Hutchings, Market Research Manager, JISC Services and Outreach |
| Dicky Maidment-Otlet, Communications Manager, JISC Services and Outreach |
| Craig Wentworth, Development Director, Organisation and User Innovation Team |

## Audiences

CHARLES HUTCHINGS: The Market Research team was established about a year ago as part of the JISC Executive. Part of its role is to support the planning of future services through a better understanding of the audiences that JISC is mandated to service. So far there has been focus on the traditional JISC audiences of Information Technology (IT) professionals and librarians and any other audiences have been implicit in the work done. Market research work has been carried out in these two audience groups and will be used to assess future developments. The intention is over time to extend the market research to cover more of JISC's key audiences.

As a part of the widening of services proposed within the current JISC Three Year Capital cycle, the Market Research team is researching students in education (schools and universities) and intends to investigate the business community engagement audience once JISC activity has developed in this area. Simon Whitmore is working on this latter area. There is close liaison with the JISC Monitoring Unit at Kent (analysis of various metrics relating to JISC Services is on their website) but there is recognition that impact assessment is a critical measurement when assessing the success or otherwise of developments and/or services. Some of the work done with librarians and IT-related staff has involved evaluation of services to establish the value delivered and to a certain extent address the question of audience needs. There is potential to use web analytical tools to explore areas of interest to the various JISC audiences of JISC Services via websites in the future.

As a new team in JISC we are still putting in place the strategy to achieve the above. At the moment we are adopting a pragmatic approach to surveying our key audiences until such a time as we are confident in having robust and reliable sample frames spanning the various JISC audiences. To date the JISC Monitoring Unit at the University of Kent has extended to include relevant questions on two of their existing annual surveys:

1. The former Content Services survey, now repurposed to cover a wider set of issues than just perceptions of content. Head/senior librarians and learning staff were targeted with a survey in June/July last year. The Monitoring Unit have released their full results which include some questions relating to JISC Collections at: www.mu.jisc.ac.uk/reports/viewreport.php?reportid=74. A significant part of the questionnaire captured information for the

Communications and Marketing team, and for us; perceptions of this key audience of the impact JISC is having on their roles and institutions. Again, there is a summary of key findings of this research at: **www.mu.jisc.ac.uk/surveys/jas_summary_07.pdf**

2. The Network Infrastructure survey targeted at heads/managers of IT where the Market Research team added a small module of questions. The survey has just closed (end Jan 2008). Details at: **www.mu.jisc.ac.uk/surveys/nis2007**

Over time it is our aim to target other key audiences with similar questions to build up a more comprehensive evidence base. Our aim is not to attempt to quantify the size or composition of JISC's 'customer base', but rather to obtain information from them which may advise JISC on better meeting their needs.

LORRAINE ESTELLE: JISC Collections is the consortium organiser for the UK academic and further education libraries and the research libraries. It engages with publishers of the online resources to negotiate deals for the libraries. There are three different models for the supply and commissioning of collections and services and it is worth detailing those before talking about audiences.

- Model One is an opt-in where JISC Collections negotiates pricing deals with publishers and then promotes the resources to academic libraries. They are free to decide whether or not to opt in
- Model Two is where JISC Collections acquires licences for datasets where no current commercial Service Provider exists. JISC Collections will then work with organisations such as Edinburgh Data and Information Access (EDINA) or Manchester Information and Associated Services (MIMAS) to provide the service and interface to deliver that data to the academic community. An example of this is the area of geospatial data, where JISC Collections licenses datasets which EDINA then provides to the academic community
- Model Three applies when there is capital funding available to acquire digital archives that can then be made freely available to everyone in higher and further education

*There may be different priorities between those who need resources for research and those who need them for education*

In terms of evaluating supply and demand, the type of audience definition and engagement will depend on which of the three models applies. In the case of Model One, each institution will make a decision whether or not to buy into the service; it will be the institutions themselves that assess audience needs and demand. In the academic sector there are a range of resources designed to meet the needs of a range of different groups and communities of interest, and institutions are best placed to do this. There may be different priorities between those who need resources for research and those who need them for education. Different sorts of evaluation are needed for these different groups.

In the case of Model Three, capital money it is usually spent on archival datasets where there are not long-term maintenance or development overheads. For example JISC Collections recently licensed in perpetuity the 20th Century Parliamentary Papers for the academic community. Before the agreement was concluded JISC Collections consulted with academics and with librarians using

very specific tailored questions for each group. This is important since librarians are budget holders while academics are users. They were asked whether buying this collection would be a good use of public money and if the archive would support research and learning and teaching. Academics gave enthusiastic support and the librarians provided considered responses often focusing on the cost benefits to the library and of course the benefits to the library users. These consultations are undertaken using mainly online tools. The feedback enables JISC Collections to decide the approaches to negotiation by getting a clear picture of the total number of users to expect. For a lot of these types of datasets it is not too difficult to decide that there will be a demand.

*This type of consultation is quite tricky because it is difficult for users to see the potential value of something that does not yet exist*

Moving on to Model Two, assessing demand and long-term sustainability can be complex. The running costs associated with building and providing a service have to be built in from the outset to ensure sustainability. JISC Collections must also determine that the investment required in building such a service will demonstrably deliver tangible benefits for the academic community and overall value for money. For example JISC Collections has recently licensed marine data and EDINA have built the service to deliver this data to the desktop. This data has never before been available online. Before deciding to go ahead with the acquisition of the data, JISC Collections talked to academic libraries about the value of being able to supply the complete dataset via an interoperable service. Until then the data was available, but in bits and pieces when requested by an academic who would then need to import it into their own geospatial information system. Consultation focused on the potential advantages of building an interoperable online service, rather than the ad-hoc requests. This type of consultation is quite tricky because it is difficult for users to see the potential value of something that does not yet exist. This is especially true in highly specialised areas such as geospatial information. However, JISC Collections is advised also by a number of expert advisory working groups, including geospatial, image, journal and e-book working groups and a general library advisory group.

There is a high demand for scholarly journals. JISC Collections manages the negotiations of its National Electronic Site Licence Initiative 2 (NESLi2) journal agreements with large scholarly publishers such as Elsevier and Blackwell-Wiley. Seven years ago JISC Collections undertook a major UK Serials Requirement survey, and the feedback from that provided the community's priorities for journal publishers to be included in the NESLi2 scheme. The journals landscape does not change significantly so there is no need to repeat the survey. There maintains high demand for the publishers' output included in NESLi2 and the use of those journals continues to increase.

NESLi2 agreements are based on what is known as the 'Big Deal' model, which means an online aggregation of journals that publishers offer. Subscribing intuitions get online access to the titles they subscribe to in print and also all the 'unsubscribed' titles by that publisher. The use of both the subscribed and unsubscribed titles is generally high – which means that the Big Deal model,

although expensive, provides good value for money. This is demonstrated by two reports by Dr Angela Conyers and Pete Dalton, *Assessing the value of NESLi2 deals* (2008) and *NESLi2 analysis of usage statistics*, (2005).

In the old world of subscribed and unsubscribed titles (what was bought and what was not bought), traditionally the audiences have only had ready access to the subscribed titles. There would be the need to obtain resources external to the library when doing a literature review, and to use the inter-library loan facility. This can be slow and arduous and it can put off people from searching widely. Now searching can be done on all sorts of collections without barriers, reaching full text of both subscribed and unsubscribed journals immediately. Such seamless connections mean fewer delays and difficulties in obtaining relevant scholarly articles. So it is certain that this easier access has had significant impact on the outcomes of new research. In addition it creates interdisciplinary benefits connecting researchers to journals that they would not traditionally consider relevant to their discipline. While it is much easier now to make these seamless connections, it can be difficult to evaluate outcomes consistently. However, it would be much more difficult to deliver the general benefits described if cost prohibited ready access to the current range of unsubscribed resources.

*…it is often very difficult to explain to potential users who are unfamiliar with them the value of these online reference resources*

Aside from scholarly journals there remain problems dealing with secondary resources supporting learning and teaching. Journals and datasets can be useful, but there is a whole range of online reference resources such as those provided within the People's Network. JISC Collections works on behalf of the academic libraries to provide access to these online reference resources setting up licence agreements, and it is still up to each library to decide if they wish to buy in. The JISC Collections process provides publishers with a route to market and a central mechanism for subscriptions. However, it is often very difficult to explain to potential users who are unfamiliar with them the value of these online reference resources.

The same problem arises with work JISC Collections is undertaking on behalf of the schools community. It is hard to explain the value of quality assured resources when users are used to accessing material that is freely available on the web. It is important to be able to give concrete examples of the benefits of access to these resources online. For example, when explaining how such resources can be personalised for teaching it can be helpful to allow potential users access so that they can carry out their own searches in the context of the teaching they undertake.

When talking about audiences and what they want, academics and universities want scholarly publications, the ability to check their citations and resources to do research, and by and large they know what they want.

In other areas people may not be familiar with online resources and may not know what is available. There is a need for promotion to encourage people to try the resources out for size.

The answer to the question of whether licence agreements should be negotiated more than once, across the different sectors, relates to access and authentication. The fact that users need to re-authenticate when they move from one service to another – free web, Internet Protocol (IP), Athens, public library authentication, etc. – is a real barrier to progress. This inhibits seamless access to a range of resources that might be provided by, say, the public library and the academic library. Users want to just go to one place to get what they want. A universal licence agreement would provide access to everyone through the UK IP range, and indeed this was achieved for the Cochrane Library. There is no policy or copyright reason why the Museums, Libraries and Archives Council should not negotiate universal access to resources thus making it unnecessary for universities to duplicate the licence – the issue is one of cost. In order to provide key reference resources to everyone as a universal right, it would be necessary to pool all of the current funding for individual licence agreements funding into one 'pot'.

The same principle applies to academic libraries for certain types of resources, particularly those journal collections to which most academics already subscribe. Top-sliced funding or a UK consortium agreement could provide universal access to all the academic libraries at a lower cost. However, national or regional bodies have to agree on which resources are 'core' and all the academic libraries would have to be willing to commit to them. The same principle could apply to public libraries and to schools.

There is a need to balance centralisation of procurement with local need. Current 'opt-in' models provide patchy access and perhaps not the economies of scale that could be achieved. However there is a risk in any one body making procurement decisions on behalf of many. The professional staff at the local level will understand best about the needs of their patrons.

I believe that JISC Collections is quite good at both evaluating content and negotiating agreements. However, it is a small team and consultation with the academic experts is essential. Feedback from the experts not only helps us to evaluate, but also aids the negotiation process.

The public should be able to access scholarly material to help them in their work or learning, but there needs to be realism about the business models and the user communities. The method of access and the functionality required is probably different depending on whether the users is a professional researcher or a member of the public. Open access to scholarly material may well not undermine traditional business models, when those models provide value-added functionality to speed resources discovery.

The SCA often uses terms such 'licensing issues' and 'Intellectual Property Rights (IPR) issues'. This is sometimes a misnomer, because the issues are not really about the licences – these can be quite liberal – but about the funding issues for those licences, and the sort of models that will enable universal access. Any content can be licensed providing there is funding available, either centrally or by groups working together to pool resources and obtain greater economies of scale and greater universality of access.

## Discovery

CRAIG WENTWORTH: The Users and Innovation Programme is a £4.75m capital investment programme funding projects looking at the application of Web 2.0 and social software technologies to support researchers, learning and teaching and also the administrative needs of individual users (**www.jisc.ac.uk/whatwedo/programmes/programme_users_and_innovation** and **www.jisc.ac.uk/whatwedo/programmes/programme_users_and_innovation/streamline**).

The Users and Innovation Programme has a good landing page containing links to the first round of projects. Second round projects are still having work plans finalised. Lawrie Phipps (Programme Manager) will have more details on this programme.

*One of the really interesting aspects of the Users and Innovation Programme is the process of development that underpins it*

One of the really interesting aspects of the Users and Innovation Programme is the process of development that underpins it. This is built on an 'agile development' methodology, an approach that begins by building a community of practice, getting people to work together to develop their ideas into project ideas within the scope and content of the programme. We felt that simply issuing a call, getting bids and selecting projects (as is often done) would not fit the 'ethos' of the Web 2.0 world in which the programme is operating – hence we are trialing a new approach for the JISC. The Users and Innovation Programme began with a support project and a call for expressions of interest to join the community of interest/practice. The first community activity phase lasted for six months and made it possible for community members to produce clear user requirements and appropriate development proposals. Only then did the (open) call go out, in an effort to discourage the traditional 'back pocket' bids. The projects are in clusters with 12 large-scale £200,000 demos and ten small £50,000 pilots. There is a range of subject areas within the clusters:

- Personal administration
- The exploitation of multi-user virtual environments
- Audio-based services such as podcasting
- Social networking in support of information discovery and exchange

The approach of the Users and Innovation Programme is certainly focused on end-user need. This could provide a proxy for what the collections should deliver. The whole process is about resource exploitation and it will be possible to demonstrate new ways of working in that area. It is more focused on changing expectations of access and what can be done with the content when discovered – for example 'mashing up' if there are open application programming interfaces (APIs). The programme is also funding a scenario planning toolkit designed to encourage people to scenario plan more effectively, and work started on it a year ago. The first version became available last year and it is being rolled out by the JISC Advisory Services Netskills and infoNet which are running workshops on scenario planning for new projects. Currently it is available through the JISC Advisory Services only to enable institutions to plan bids better.

The Business and Community Engagement Programme is also known as the 'third stream' – knowledge transfer and/or knowledge exchange. It is a new piece of work funded by Higher Education Funding Council for England (HEFCE) core money. It is intended to help universities enhance their external impact and to exploit better their intellectual property and knowledge assets by developing new working relationships with small and large businesses and with other sectors external to higher education. It should increase external influences and generate new revenue while supporting institutional missions (**www.jisc.ac.uk/whatwedo/themes/business_community_engagement**).

The Business and Community Engagement Programme has a good landing page. This programme had a long gestation period before approval from HEFCE. There is a link to a briefing paper that provides more detail about the programme. In terms of individual projects, they have only recently 'kicked off' with final approvals still coming through. There isn't even a roadmap of projects yet and detailed funding has only just been allocated. Information on the projects will go out as circulars and briefing documents when they have all been completely finalised. Simon Whitmore (Programme Manager) will have more details on this programme.

The development programme for the JISC Organisational Support (JOS) committee takes the institutional perspective on all new technological developments: institutional management and administration, business functionality, change management, emerging staff roles and new ways of working. It is looking at shared services, green computing, and how institutions can best incorporate the technological aspects of their work into the broader institutional strategies, embedding the new technologies rather than them 'sitting alongside other developments'. It is considering how staff roles are changing over time (**www.jisc.ac.uk/whatwedo/programmes/programme_jos**).

The programme of work for the JISC Organisational Support committee reflects the work and priorities of the committee and has five key principles and five key themes, which are explained in the committee's 'Strategic Framework' document, available on the JISC website.

The Cross-Cutting programme for Institutional Exemplars has around £1.5m capital investment and is funding some big-ticket projects between £200,000 and £300,000 each. Again it is a programme where close alignment with organisational strategies is a given. It is designed to explore new approaches to delivery – perhaps using service oriented approaches – and is very much oriented towards institutional change. The intention is that the exemplars will be written up and promoted to other organisations as transferable approaches which could be adopted by them. It has a wide and varied portfolio, for example: green computing, supporting flexible ways of location-independent working, approaches to secure online assessment, identity management and the integration of social software into institutional repositories.

There may not be much about resource discovery directly but many projects include the investigation of the disclosure of content through support systems. All of the evidence from the projects is that a significant barrier to greater shared working is the need to change people's culture. There are pockets of 'Dark Ages' culture around activities associated with information management and accessibility. There is obviously no need to limit physical boundaries. There is an interesting report under the Business and Community Engagement Programme that shows that many barriers to working with external partners are in people's minds. It is all received wisdom rather than reality! The Business and Community Engagement Programme is starting to work with the BL's Business and Innovation Centre. This is possibly relevant to what the SCA is doing. Simon Whitmore is the contact for this. TechWatch undertake future gazing studies to establish how services should be developed.

### Evaluation

CHARLES HUTCHINGS: Part of the Market Research Unit's remit is to build evidence of the value and impact JISC is having on its community. Such evidence can come from a range of sources including market research, ie opinions and perceptions. As the Market Research team, we do not technically serve any audiences or provide any e-content; rather we have a responsibility to broaden our knowledge of these audiences across as wide a range as feasible. This could range from IT managers through to librarians and practitioners. As part of this we have started to obtain data on perceived impact and other issues including needs/concerns from certain key audiences. Research very much focuses on the 'corporate' impact JISC is having ,ie the combination of all that we do, although we do look at perceived impact and benefit realised from individual services.

As part of an internal study investigating the potential interest among international audiences in paying for JISC Services, we identified that jisc.ac.uk and its services use a range of tools to measure web traffic, most commonly Google Analytics. The extent to which this data is then used by services varies.

*The monthly summary produced by Kerry Down is a good example of how Google Analytics can produce useful headline metrics of traffic*

This study hosted an online quantitative survey on the websites of 18 JISC-funded projects. This was targeted at international visitors but did capture information from some UK-based visitors. The survey did not, and could not, quantify or profile the customer base of services as it was a self-selecting sample. As such the information was purely used as being indicative of some of the types of people who might be using our websites for various reasons. Its aim was to test in principle the interest in JISC Services as a whole. Adopting consistent web analytical tools and reporting across JISC websites would in my opinion be of benefit to JISC to understand better what visitors are accessing and interested in (bearing in mind the limitations and caveats of such tools). The monthly summary produced by Kerry Down is a good example of how Google Analytics can produce useful headline metrics of traffic. The JISC web team has commissioned and is currently commissioning consultants to undertake web user/usability studies to develop the website which may involve user profiling. Kerry Down and Ben Whitehouse in JISC are responsible for this. I believe that Intute were exploring the possibility of

conducting some customer segmentation research to assist with future business sustainability issues. I helped them with an ITT some time ago but am not sure how that progressed. Caroline Williams at Intute is the contact there.

### Communicating the message

DICKY MAIDMENT-OTLET: The SCA must answer clearly the questions, 'What will be the value to the man and woman in the street? What is the SCA actually doing for them?' The big change that is slowly emerging can be attributed to activities such as the Open Access movement, and the push toward new business models for publishers together with the thinking that is now being done through the SCA on the use of public money: how can the traditional licence model continue when all taxpayers pay for what the licences provide rather than the few that are privileged to access it? Lorcan Dempsey has made the point that all the techie stuff will happen regardless and it is important that JISC goes beyond the boxes and wires to define the 'compelling reason' and if it is possible lobby at a political level. The SCA could end up with a new model framework showing how someone might successfully find a relevant resource across a range of public sector organisations. That could then be developed far more widely, but the idea will need to be sold to those organisations and government and it's a big change.

*At the end of the day it is about the person in the street and what the public resources are, who owns them, who pays for them and who should have access to them*

An example of where people (the end-users) don't need to know about what JISC is doing is something like the Information Environment (IE) architecture and yet the need to show impact all the time drives the need to tell them, but do they really need to know? It is essential to work towards a common understanding to create a picture of what life might be like without and with. It is not necessary to present all of the internal stuff; it is more important to describe the outcomes and the benefits to the end-user. At the end of the day it is about the person in the street and what the public resources are, who owns them, who pays for them and who should have access to them. To get behind that person and capture their attention would be great. Perhaps taking a more 'Greenpeace' approach would work – sell the concerns about the risks of nuclear power stations without resorting to the detail of how they work. The message is far more important than the detail. The right message will get the attention of the people who drive the agendas and the money as well.

A problem for JISC is that rather than leading the transition from research to product, delivering fully worked up solutions, JISC sees itself as an agent of advice and guidance. A solution is action based on evidence to do x and y, but JISC doesn't do it like that, partly because it is an **advisory body** for and of the institutions and community that it serves. There are many advantages to this, however it makes getting strong messages out much harder. It is much easier in the compulsory education sector where the connections between strategy and policy are totally different. Government policy is much more clearly stated and translated in the compulsory sector. JISC's approach is to provide the dictionary of words to enable other organisations to create the sentences. The research process produces the words, not the sentences. From the SCA perspective things need to be a bit different not least because it is more than just JISC. There are many advantages to the JISC approach, though: JISC is forward thinking, can take multiple viewpoints and has a track record of successful collaboration. An early

example is the Electronic Libraries (eLib) programme, an excellent mechanism to foster collaboration between libraries and partners. JISC does have experience of the technical stuff and that is also pretty handy; it also does not worry about finding single, complete solutions and so can pursue things that may go wrong as a part of the research process.

There is a need to consider how information is disseminated particularly from the SCA perspective; JISC should put a stake in the ground here. The stake in the ground needs to make much clearer what the full picture is and what the JISC line is on the SCA, as do the partners. The Libraries of the Future theme which begins at the 2008 JISC conference and will run for a year (**www.jisc.ac.uk/librariesofthefuture**) is a good example of an umbrella to bring together a lot of JISC activities in a coherent way and overcome the problem of people working in silos of activity. In the same way the activities across the partners of the SCA need to be presented in a coherent way.

*These senior people don't have a clear picture of the work of JISC, let alone the SCA…*

I have a paper on internal communications to explain the problems of silos of activity. This tries to help JISC to frame itself as an integrated organisation; currently it is normal practice for communications to be devolved to project level so that join-up does not necessarily take place. Even marketing budgets are devolved. Corporate marketing work may be limited to annual reports and the JISC website. The question is how should it be done to pull everything together without confusing people? One method is differentiated audience communications. For example we are hoping to focus on specific groups such as bringing Vice Chancellors together to discuss what JISC is doing to share the JISC approach. This has not happened in the past. These senior people don't have a clear picture of the work of JISC, let alone the SCA, and I think the approach will really help; they have to consider how they use their limited financial resources to best advantage and therefore the SCA work would be appealing to them. There are plenty of stories that can be used as well. If you look at medical students, when they are in universities they have access to resources that they cannot get once they start to work in the hospitals or can get but are procured again using public funds a second time by the NHS library, resulting in an unnecessary duplication of digital resources and funds. There needs to be a model framework for licences to avoid this waste of money and that framework will be provided by the SCA.

The irony about discussions on value for money is that currently the biggest success story for many organisations JISC NHS and so on actually still propping up the old publishing model. How can we square that circle? The approach must be to get to senior groups of institutions and for them to lobby from their different sectors. It must be about the organisation's own users and the potential links to other users of public sector content. Those are the people who will need to be convinced, as well as the policy makers, of course, to be shown what the benefits are. The JISC Digitisation programme is an example of good practice as it tries to open up resources to everyone. Stumbling blocks though include a range of organisations that resist experimenting with new business models – the traditional publishing model once again. It is not going to change easily with a head-on

approach. E-journals are another good example. The Big Deal is a well known activity but is confidential so no one can share and create a market, so it's one sided in favour of the publishers and certainly not commercial.

I tried to progress new communications approaches through the marketing officers of the SCA sponsors, but there was not too much success. It would be a great idea if each organisation were to commit to one thing and attach a communications person to work with it. Work is needed on what it should be but one or two things should be findable – common core evidence on audiences, for example, or how to take chunks of content from different organisations and combine them together. The critical task would be evaluating it to see impact.

There are plans to hold an international seminar next year hosted by the SCA. This may present some possible examples of what can be done for the future. Of course, organisations can lobby and promote ideas on their own and if so they need to package the messages to fit the views and expectations of the targets. Pitching different stories for the same product can be advantageous and overcomes gaps in audience reach, for example JISC has HEFCE between them and government departments. For JISC it is also important to avoid misunderstandings about how it engages with the market. The SCA partnership can help with this.

BALVIAR NOTAY – Manager, Resource Discovery Programme. Balviar was the project manager for the Presentation Programme that ended in January 2008. This produced four significant reports, including one on personalisation and one looking at usability studies. The outcomes of this programme have now been embedded with the portals programme into the wider programme called Resource Discovery.

The Personalisation Report within the Presentation programme was the largest piece of work. It was a landscape study of how to go about personalisation. It sought to produce a definition of what personalisation embraces and an assessment of whether current systems and services could provide it. It looked at both open source and proprietary products. At that time the main focus for personalisation was on the use of portlet technologies, but since then there have been new approaches to resource discovery including Web 2.0 in its various forms. Subsequently (2006) the authors of the report were invited to run a workshop based on the findings to discuss the report and at that meeting it was possible to update the landscape.

The report that resulted from the workshop led to the funding of two further projects on personalisation. Personalisation is based on both data on an individual held somewhere and information on specific user behaviours. Customisation is another element. There are push and pull aspects – the system offering recommender services and the user's profile seeking relevant materials.

The first of the two projects is looking at how Web 2.0 can provide personalisation and customisation within aspects of the IE for the user. The Archives Hub has a module within NetVibes (**www.netvibes.com**) to pull in all types of services to produce a customised space: archivists can pull stuff into their own environment.

Could this approach be extended to services provided by EDINA and MIMAS? Could those services be pooled and put into services outside of the education sector? How could such approaches be more widely taken inside the education sector and also how can things be mashed up? How can reviews be tagged and, if that can be done, where should they be located and who should manage them?

The second project looks at personalisation in identity management and includes identity, security, authentication and the retention data: what does a user allow other services to see? Should this include the things the user has been doing? There is some overlap between the two types of service. Should there be a central location to store personal preferences and user data or should it be split? How should it be used and how protected? In terms of accessing a wide range of different data sources doing the 'cross talking' is non-trivial.

The two projects overlap and at the end they will be coming up with demonstrators of what is possible. It may be possible to pick a shared core subject such as history. Within this there is the concept of 'groupisation' which is the creation of clusters of resources that support the needs of particular groups within the academic community – for example students following a particular module. The projects will also need to look at how all this identity management will fit in with the Shibboleth. These projects are running at the moment and there is some information on the web (**www.jisc.ac.uk/whatwedo/programmes/resourcediscovery/Personalisation**).

*It will take time to bring about change, since rapid development has a major impact on service delivery*

The project that is looking at personalisation and identity management has held one workshop to examine different types of user needs: students, academics, etc. It is trying to build a profile of the information that people are generally happy to reveal and there is a further user requirements workshop in April that will look at scenarios. What would users be happy to have a service push at them? Does the Amazon recommender approach work in the academic world? It will be important to ensure that personalisation is not provided just for personalisation's sake, but to deliver genuine added value. The work done previously on personalisation has now produced this programme of work that will help to move the Information Environment work forward. It will take time to bring about change, since rapid development has a major impact on service delivery. It is important to find ways of testing new ideas before they are incorporated in services. User engagement and user control is not going to go away. It is important now to explore the relationship between formal resources and informal ones that are found in Web 2.0 activities. Social tagging is being looked at in the EnTag project which focuses on the repositories environment (**www.jisc.ac.uk/whatwedo/programmes/programme_rep_pres/etfd**). There is also the RichTag project repositories using semantic social tagging (**www.jisc.ac.uk/whatwedo/programmes/programme_rep_pres/rich_tags**).

Turning to the usability report there has been a workshop to make the recommendations in the report usable for projects and they are now being built into project management guidelines. The report contains a great deal of information and it has to be aligned with existing practical advice for projects. To develop a service

or interface the testing needs to be done with care at the beginning. In terms of standards it is no longer really metadata that is the problem, it is at the other end of the supply chain in users and interfaces.

There are various projects looking at resource discovery. There is the Intute Repository Search project (**http://irs.ukoln.ac.uk**) which is examining over 80 different resource repositories. It is looking at the harvesting of metadata and how to normalise it across systems: how to make searches consistent. Application profiles are being developed: so far there is a media profile, an images profile and a geospatial profile.

Within JISC there is the whole Collections area and that has been divided into various subjects – images, geospatial, e-books, media. Some are serviced through the data centres. In the past some of the resource discovery has been media-specific. EDINA's Go-Geo! portal (**www.gogeo.ac.uk**) uses GeoCrossWalk (**www.geoxwalk.ac.uk**), a disambiguation service that allows input of postcodes and responds with place names and grid coordinates. It is then possible to expand or narrow the search. The GoGeo! portal was developed with a feasibility study in 2000 to identify user need. It is now at a stage where it has been running as a semi-service as proof of concept. It is working and at a stage to decide whether to fund it long term. The work that is funded has been media-specific, but it will not be like that in the future.

The Visual and Sound Materials (VSM) portal originally enabled searching different collections of images. But there are lots of collections funded by public resources that never surface in Google. The New Opportunities Fund (NOF) Digi has great stuff in it, but it is not to be found. The portal development now aims to bring together primarily free high quality collections as well as acting as a discovery tool. It allows people to discover new collections and then decide whether they wish to subscribe to them. Currently the VSM portal is searching a number of collections, for example, the Arts and Humanities Data Service (AHDS) archaeology, Teachers' TV, NewsRoom online, Open Video Project, the Scottish Cultural Resources Access Network (SCRAN) and the Spoken Word Project. The Wellcome image library and other collections were also interested. The task is to find ways to do subject-based image retrieval across the collections. It is useful in the area of people studying design and art rather than other subject areas, but worth trying. VSM also looked at developing portlets and how to plug them into institutional environments. The final report has just been received and hopefully this will show how useful the approach will be.

*The hard part is to make sense of the landscape. All the stuff can be developed but if people don't know about it then it will be no use*

So, overall JISC is doing some interesting work in this area. The hard part is to make sense of the landscape. All the stuff can be developed but if people don't know about it then it will be no use. Where cross search is done, what is the best way of doing it? The landscape can be complicated, but how can business decisions be proposed to move things forward? Users are using Google, but how do you get them to use something more helpful?

The task is to edge forward, trying things out. The VSM portal needs to have the right tone. How do the people supplying the content/metadata get it to be useful to them? The VSM portal may be a showcase of what is out there. There is mileage in working things through since there is a lot to consider.

# Museums, Libraries and Archives Council

| Interviewees |
| --- |
| Sue Wilkinson, Director of Policy |
| David Dawson, Head of Digital Futures |
| Javier Stanizola, Head of Research and Evidence |

## Audiences

The most tangible Museums, Libraries and Archives Council (MLA) example of design involving audience engagement is the Inspiring Learning for All (ILFA) website (www.inspiringlearningforall.org.uk). This is a product targeted at the 'businesses' that the MLA serves. Its purpose is to improve practice and provide a framework to improve services. ILFA is aimed at professionals working in museums, libraries and archives. It was piloted and tested at all stages of development from concept through content and website design. It is currently being reviewed to make improvements in the light of user experiences. It was and continues to be a very thorough process. What about Designation Challenge Fund e-content? There has also been MLA funding within the Renaissance programme (regional museums development) used for the development of web services. This programme is currently under review, but in future the MLA might give advice and guidance on how such funding could be used, based on the outcomes of the SCA programme.

It needs to be remembered that the actions and choices of those institutions as to how they use the funding will depend on the priorities set for the wider Renaissance programme. The general thrust of all the MLA's work is about meeting user need. User-facing organisations must do it at all stages, but it can be hard to get them to do it consistently. It can work with programmes such as Renaissance where funding is attached but can be more difficult elsewhere. In future the promotion of the Treasury's Logic Model (in The Green Book: Evaluation and Appraisal in Central Government – http://greenbook.treasury.gov.uk), which shapes business planning around outcomes, should provide a rational framework for the whole of the sector to follow.

Another example of user-based development is the use of usability testing on the MLA website. The intention is to establish the needs of different groups of users – what should the site offer for them and how should it be presented? There will be a particular focus on outcomes – learning and skills and communities – and the site will need to provide the right kinds of resources for the different groups.

There is often the problem that institutions choose their focus groups from who they know, talking to the same types of people again and again. 24 Hour Museum have used focus groups but they are now using the skills of a marketing professional on their board to do ethnographic studies, tracking how people use the site over time, looking at the non-online behaviours, etc., for example defining their life by the clutter in their homes. It is important also to remember the Taking Part survey that has rich data that provides new light on user behaviour. Work from the survey shows that class and income are not main drivers of behaviour in relation to cultural activity. Social status (peers) is more likely to be the main influence.

Many museums, libraries and archives are reluctant to segment audiences saying that they are there to serve everyone. They find it hard to state clearly that services are aimed at particular groups. In developing the cultural offer in the 2012 programme there was a strong consensus that poetry would be an excellent theme for the literature project, but when it was proposed that there should be a specific target group – looked-after children – there was concern that such an approach would be unfair to other children. The focused approach would provide the opportunity for clearer outcomes and would not prohibit involvement of others, but the concern remains that the project should be more widely focused. It is important to remember that the Department for Culture, Media and Sport is driving priority groups. At present the main segmentations are the traditional ones of age, ethnicity, etc.

Generally, those working in museums, libraries and archives think of activities before target audiences and outcomes. For example, the creation of Rhymetime events usually precedes any decision on whether and how to evaluate. They do not start with the idea of an outcome of improving literacy in 13-year-olds and then decide how to do it. They don't have full information on what does or does not work.

To produce a narrative that begins with impact, the first step should not be people saying we want to do a website. Everyone starts off from the wrong premise. The idea in using the Logic Model is that there should be a narrative describing how the sector adds value to specific social agendas aligned with government drivers and priorities and with identified social need. The MLA is focusing on skills development and building communities. Any developments should contribute to these particular outcomes. 2012, for example, starts with an objective of creating a partnership with the Arts Council to provide the resource base. The defined outcomes will be functional literacy for a particular target group. At that point it is possible to decide on what to do – poetry for specific groups. This can also happen at an organisational level. It can work with content and with advocacy. The model comes from the Treasury so it is in a language that they can understand. The MLA will want to take it further. Paul Bristow is developing an outcomes framework for local government work, and it is intended to put the Logic Model around it. Starting from outcomes changes how service provision is developed. Those working in the sector do require continuous encouragement and guidance to follow such an approach. Producing a list of audiences is not as good as having three or four shared outcomes.

From the research point of view the model provides an evaluation framework from the outset. It is not always easy to understand how to embed it in normal practices. Drivers, resources, policies, activities sit in the middle. At the start there is understanding the context, and outcomes are at the other end. The middle – the processes – are created from both ends.

With regard to content monitoring and cross-link, the People's Network Discover service includes content from 25 organisations plus Renaissance museums creating e-content. Discover is an aggregator. The Michael project has created a map of the cultural landscape. It is a tool for discovering where stuff is that can be employed by SCA. The Michael data is also available on FrogTeacher (**www.frogteacher.com**), one of the VLE services provided to schools. Teachers are able to find resources from museums, libraries and archives within the VLE. The next big development will be VLEs for communities (they are already established in Hartlepool and Leeds). The MLA sector can therefore use 'guerilla' marketing to schools rather than approaching each school directly.

### Discovery

This area raises wider questions: how is the MLA marketing to its organisations? Learning and skills and communities – all MLA work is trying to drive forward outcomes in those areas. The B2B role will be aimed at elected members and directors and will be done in collaboration with other non-departmental public bodies. The culture and sport block will be the main thrust; there has been a big shift in last 18 months. The MLA is trying to push the sector towards understanding the need to get more target-focused. For example, the Youth Board is intended to focus organisations on positive activities to support the outcomes. It is essential to be clear about the offer. A 'youth offer' is being launched at the end of January. This will make clear what a young person can expect when they walk into a library. It lays down a challenge to all policy makers. There is more and more focus on offers. The MLA wants to do a similar offer for adults in the cultural sector to demonstrate clearly what someone can expect wherever they go. At the outset the Youth Board reviewed all the literature on the expressed needs of young people.

*The trick is to find a balance between innovation and time wasting, to allow people to experiment, but avoid unnecessary duplication of effort*

Becta have done considerable work on what the personalisation needs of young people are so there is much that the cultural sector can pick up that is 'off the shelf'. It would be possible to adopt many of the objectives. If schools have VLEs the MLA will try to get content embedded. Taking Part only counts virtual visits. There could be some demographics and maybe some e-trends in the future, but for now it is general use data on audiences. The MLA now builds horizon scanning into all planning. The UK Office for Library and Information Science Networking (UKOLN) provides this within the area of e-content and services. It will be important to monitor social changes as much as standards and technical issues. Outcomes are important, but it will need to be both, to try to join up how people do their content (standards, etc.) but also what are the longer-term trends? The trick is to find a balance between innovation and time wasting, to allow people to experiment, but avoid unnecessary duplication of effort. For example, should there be a national IT platform for public libraries? This would enable libraries to be much more like Amazon in service provision. Is there a danger that by the time such a platform

was operational, everyone will be using e-books on their iPods? How do you know whether that is the case or not? Should it be the market that does that? Should services only focus on those who cannot afford to pay for services?

### Evaluation

Renaissance guidance is good for this since it is a requirement of those involved for institutions to use the ABC approved and accredited software. It has taken Renaissance some years to get to this point. Only recently has web use been tracked. Susi Woodhouse (Digital Futures Manager) has been checking NOF Digi results and they are very impressive: hits in the hundreds of millions. The NOF Digi programme benefited from a standard methodology for assessment, using the Treasury Logic Model as an evaluation framework. It is a transferable process. There is a standard system for the Renaissance hub museums. It is not impact measurement but data collection, but the principles of a common approach are established within the sector. Library standards have created a similar expectation. It took long time to get the Renaissance hub museums to understand the worth of collecting in the same way, but the results are of high value.

It is hard to standardise and validate the way data is gathered. It is not even easy to count the number of people coming through the door. If the National Audit Office were assessing such data they might feel it was of mixed quality. ILFA attainment studies are an important step, but there needs to be caution about how far the outcomes can be proved. It is not possible to show the museum visit actually made the difference to the SATs scores. It may look as if it was the main improvement factor, but it cannot be proved conclusively. In the North West they are looking at doing similar things but with a control group also.

## National e-Science Centre

| Interviewee |
| --- |
| David Fergusson |

### Audiences

The National e-Science Centre (NESC) has examples of its work that touch on audience analysis, discovery and evaluation. The particular aspect of NESC work that is relevant is Grid training. For the past four years NESC has been providing a shared repository of training materials from the UK and Europe covering Grid technologies and e-science. The objective is to provide easy access to all who wish to use the resources and encourage their continued use and development. There are now more than 5,000 items in the repository, including video, audio, presentations and software. This is the Digital Library of Training Materials: Training, Outreach and Education (www.nesc.ac.uk/training).

There is a licence management system and contributors can deposit through specific licence agreements, but extra support is provided for those wishing to use Creative Commons licences. NESC is also developing the Digital Library with a variety of partners, for example, the Open Grid Forum (**www.gridforum.org**) and also the e-Infrastructure Reflections Group (**http://e-irg.eu**). This is an EU group coordinating research and development on Grid technology across Europe. NESC is working with both bodies to provide recommendations for IPR management on digital training materials. At present the preferred route to a single international standard seems to be towards the Creative Commons framework.

The intention is to embed the service and related resource-gathering systems into all activities so that experts can feed in their views and assessments are made on training at summer schools and e-learning type events, so there is considerable user feedback all the time. This provides useful support for all aspects of training. There are of course lots of issues around IPR and licences. The Digital Library and the training courses are available to anyone who can use computer facilities for academic work.

The management structure over the top of the Digital Library provides an IPR structure based on the Creative Commons. The purpose is to protect the work done by others against unreasonable harvesting right across the public domain. One way to encourage the community to use systems is to demonstrate the value of the citations that arise from use of the training resources. This value applies in the same way as the citation of scholarly works. An important aspect of the systems is to support the citation process. NESC can track how the system is used in a couple of ways. Hits on the website and downloads are naturally available, but since much of the material comes from other projects it is possible to chase people up and get use studies and good stories, contacting users to find out value. This is a starting point for seeing how communities of users can take real benefit, which is much more use than simply counting hits.

This feedback makes it possible to review and revise the content. Part of the work of managing the service is collaboration on projects so it is possible to talk to individuals. In addition there is opportunity through the Open Grid Forum to talk to training communities: where are gaps and where are the opportunities for people to contribute? This is all part of providing voluntary coordination with the research community plus the chance to commission people to produce material. NESC is involved in the JISC e-Uptake project (**www.e-researchcommunity.org/projects/e-uptake**) and is undertaking a gap analysis of what is missing from training resources in e-science. David Fergusson would be glad to talk more about this with the SCA. This will involve collaboration, service design and talking to audiences.

### Discovery

Access control to the Digital Library uses the UK e-Science Digital Certificate and other relevant certification systems. There are a number of Web 2.0 routes into the Digital Library, including Facebook and iTunes where there are podcasts on resources. There are also Rich Site Summary (RSS) feeds. The priority is to engage with as many existing services as possible where the Digital Library is the

'back office' repository and APIs allow multiple routes. The Digital Library is also federated with other EU projects making it possible to share content and access across a number of countries.

Approaches to personalisation focus on encouraging communities to contribute enriched metadata and using the Amazon model where people can evaluate the material and add reviews. Effort is being put into some projects to provide editorial contributions that should stimulate further contribution. The Digital Library enables users to build their own personalised reading lists. There is effort going into making the service more Google friendly. With careful selection of search terms, the library's resources will usually appear on the first page of hits (try 'digital', 'library' and 'grid'). Google is also a means of searching when using the Digital Library.

Future watching is another core role for NESC. Technological developments are tracked to spot things likely to add value in the research sector. Web 2.0 activity is not just about specific technologies, but using the Web 2.0 approach as a model for community engagement, focusing community effort. Facebook has not been changing the patterns of use, but has only been running for a couple of months. However, these approaches are of real value when talking to students and postgraduates – people starting out in research rather than the old hands!

This work is showing how important it is to be agile, to be in many community environments at the same time. Some activities will succeed and some will fail. The NESC Training Team was only set up in 2004 so it was natural to go for a range of services that fitted into other interfaces rather than a complete 'vertical' solution. It was better to look at federation than trying to own the whole territory. There is another group in Sicily doing similar things in training and Web 2.0, but NESC's focus is more on training infrastructure than the other groups. Open Science and similar groups are involved, but there are only about four or five groups active worldwide.

From the point of view of IPR it needs a very open policy to succeed and much has been learned from the open source movement. This has moved the service away from the idea that value must be derived from closing down the opportunity for people to replicate material. More will come from making it all freely available. There is an interesting comparison between how NESC and the universities work. Universities tend to have very tight IPR policies for lecturers' material and the like. The NESC is more like Massachusetts Institute of Technology – opening up all resources in a managed framework. It can be very frightening for organisations and the Wild West model sums it up. Most organisations are not used to surviving in that kind of environment.

### Evaluation

There is a strong drive to focus not on quantity but on impact and outcomes, following up training activities with surveys and evaluation. This injects some quality control from event evaluation into the Digital Library. The NESC wants to stimulate more people to become trainers. They are not going to get paid for training so wide interest has to be stimulated to find enough volunteers. The Digital Library can help people bootstrap themselves to become trainers, and there is a system to monitor the process of training the trainers through a certification

process. Work is now being done with the Open Grid Forum to see how to engage with university curricula to provide certified Grid trainers – a developmental role for the NESC and the Digital Library.

It is of course hard to define quality, but helping people to see what is good helps them to recognise quality and they will then be able to select what is the best. It takes time and works best in a more controlled environment. It may be hard for other organisations to do it, but the NESC has a remit to stimulate demand. Not a lot of usability testing is done due to lack of resources, so assessment is mainly post hoc; feedback from courses provides data to revise courses as a result. Injecting usability prior to delivery would be very useful. It makes life hard, but it is the proper way to proceed.

## National Library for Health

| Interviewee |
| --- |
| Claire Honeybourne, National Core Content Manager |

### Audiences and discovery

The NHS is represented by the National Library for Health; however there are many different bodies within the health sector carrying out very different work, for example the National Institute for Health Research is creating a portal of digital content highlighting the value of creating more coordination. It will be important to try to join everyone up. The push towards standards of interoperability is crucial to this mission. In addition there will be a need to find ways of showing shared public value. At present the task is to draw a map of what is happening now as a point of departure: it is both interesting and complicated.

Certainly current activity needs to be shared more. At a very basic level it would be good to share contacts within the SCA so that there can be more informal cooperation. The core task is the search for common ground, for example, scenarios that could be tested in existing and any new systems. Any demo does not have to be a full working service. It should not be necessary to build a new search engine. By using common standards it will be possible for people to create their own relevant access route. The Information Environment Service Register (IESR) (http://iesr.ac.uk/about) is an excellent step in that direction.

At present every NHS trust is independent and they are developing their own portals for local content. The question for the National Library for Health (NLH) is how to plug the NLH services into these local portals. An API has been developed to solve this problem. It would take five years to get taken up widely and needs both a registry and people getting up to speed with the concept of connecting to external services. If all content was registered in the IESR, making it machine-to-machine readable and with relevant APIs, etc., people could plug the bits of what they want into the portal locally.

The future might see individuals building their own portals where they create their own resources and spaces. Developing the rest of the content supply chain is crucial and the SCA is working on this also. Work Package One is an attempt to find a common approach to audiences. The sponsors are a varied mix of organisations and the approaches to and study of audiences is just as mixed. The NHS situation is complicated by the fact that audiences include students, social care workers, academics and medical staff all using the NLH in their own ways for their own needs. They are big audience groups: social care workers alone form a group of around two million people.

It will be important for the NLH to understand what the public libraries and higher education are buying to avoid duplication wherever possible. Discussions have been held with the National Institute for Health Research and these have highlighted that more content is being hosted in UK Pub Med Central as research organisations buy out the embargo period to deliver full public access much sooner. We must ensure that the digital content we make available is only purchased once whether through opening up Open Access content or purchasing access from publishers. This shows a lack of join-up across the different sectors and implies that there is a need for much better communication across and between organisations. It is essential to get everyone talking together. We must move away from the institutional model when such sharing of resources is discussed since it acts as a constraint on experimentation and on development.

My job as National Core Content Manager is to buy electronic content for NHS England which is topped up through Strategic Health Authority and local Trust purchases. The difficulty is identifying a 'core' collection of electronic content that should be purchased once. There is a focus on journal titles and selection has been influenced by talking to the NLH Specialist Libraries and what is needed locally. This has produced a priority list of 500 journals. The original idea was to move away from the aggregated database collection of content to purchasing specific required titles, however, it has only been possible to use this model for 30 titles so far. The other 400 nationally purchased titles are still provided in an aggregated database. There is simply not enough money nationally, but individual Primary Care Trusts and Strategic Health Authorities can purchase locally if they wish. Unless more money for national purchase is forthcoming there is a real danger of a north/south divide since there is more funding available in the more densely populated south of the country.

*Unless more money for national purchase is forthcoming there is a real danger of a north/south divide since there is more funding available in the more densely populated south of the country*

Discussions are taking place at present to overcome these problems but the barriers of funding are still there. This is all very relevant to Peter Hill's review of NHS libraries (www.library.nhs.uk/aboutnlh/review). The NLH is never going to be able to buy all the titles everyone needs nationally so there is also a need for effective document delivery. Would it be possible to join procurement across the various SCA organisations, for example?

Obviously the needs in domains such as archaeology or health are different, but a document delivery model that fits all domains would be great. The idea that it would continue to cost up to £7 for immediate article requests is not sustainable. It would be possible to limit access constraining it to IP addresses in England. The National Core Content collection found that access to the current collection of

content equated to about 50p per article. Further work needs to be carried out to guarantee the quality of the publication and ensuring a structured abstract that is meaningful and the metadata rich enough so that people discover things that are useful to them.

An example of the value of studying user behaviour and characterisation is well reported in the journal *Technical Communication* from a study of the redesign of Arthritis Source (**http://tc.eserver.org/22171.html**). The study revealed that many people were arriving at the site without knowing why. They had matched search terms with site metadata without knowing that they actually needed information about arthritis. They were discovering sources without an awareness in advance of where they needed to look: new demand for old resources. The challenge was then to design the site to give these 'foreign' arrivals confidence they were in a useful place. So, the metadata was correct but users did not know what the concept they were searching for was. NHS users are professionals so they should know what they are looking for, but Open Access content is available outside of Athens so these issues are important.

MyLibrary Space within the NLH is an example of how in future people might build their own portals, and personal metadata about people will be an essential factor in achieving relevance to individuals. The semantic web may support this approach best. A very early prototype can be seen in the EU funded Europeana Project (**http://www.europeana.eu**). This is trying to create semantic connections across 23 languages. But what will the user get back? We may talk about quality of data, but how can such a big system do it? It cannot be just a Google 2.0. Harvesting from so many different places might make it difficult to guarantee consistent quality and, within the context of the NLH, the result of that could be life threatening. What guarantees are there? The brand of the National Institute for Clinical Excellence (NICE) or Cochrane systematic reviews give some assurance of accuracy, far better than 'Joe Bloggs' comments. For the NLH the first priority is to deliver to clinicians and they need timely and accurate advice; trying to give everyone the same front end may not work. Quality is crucial to getting the model right. It is important to make sure people find useful material and not mixed in with five million other hits. Systems need to understand and respond to user need.

### Evaluation

A few user-needs analyses have been commissioned but no horizon scanning. User needs have been looked at through consultancies and user testing, however this has not been done on a regular basis. Web trends (Hitwise) are available and all of the Athens resources' use can be counted and tracked quite specifically. Journeys are tracked a bit but there is no major analysis. Statistics are available on who uses what. The specialist libraries that have Open Access collections provide general details of overall use, but nothing more. Statistics on specialist libraries will be looked at further and this information can be provided for the Work Package One work. Why not all work on user profiling? It would be worth speaking to John Paschoud at the London School of Economics who did work for JISC on user attributes for the development of authentication systems. The NHS is thinking of building on this approach.

# 4. Other Organisations Interviewed

## 1. EDINA

| Interviewees |
| --- |
| Christine Rees, EDINA Service Delivery – Bibliographic and Multimedia Services: Team Manager |
| David Medyckyj-Scott, EDINA Service Delivery – Research and Geo-data Services: Team Manager |
| John Murison, SSDS |
| Helen Chisholm, EDINA User Support: Team Manager |
| Leah Halliday, Bibliographic Services Development Officer |

### Audiences

- EDINA is a JISC-designated data centre
- EDINA's audiences are primarily staff and students of UK higher and further education. Recently some UK universities have developed an overseas presence/campus
- Normally, EDINA services cover the four Home Nations. However, some EDINA services are freely available, while still having an academic focus
- The licences that JISC has negotiated in the past for content are often specific about the extent of the audiences – for example, it is not always possible to open services and content beyond the tertiary education sector
- However, the recently created limited company JISC Collections is a separate group and is expected to recover its operating costs; it is looking to new audiences and markets and is negotiating licences with content providers to reflect this. Schools could be included in future developments, and a pilot scheme offering online services has just started

- Some services are not available to further education, due to licensing restrictions. Others are available but further education is not the main target audience for the service; this latter case applies to services funded by the Research Councils such as UKBORDERS
- EDINA's location in Scotland makes it appropriate that it provides services for the Scottish community (an example is the Scottish Academic Libraries Serials (SALSER) catalogue)
- Adult learners have not, so far, been a priority audience for EDINA

### Meeting the needs of these audiences:

- EDINA is primarily an aggregator and supplier of content rather than a creator, although recently it has been collecting some content from the academic community for use/re-use within that community. Examples include the JISC Online Repository for Learning and Teaching Materials (JORUM), the Depot and the Serials Union Catalogue (SUNCAT). The Depot (**http://depot.edina.ac.uk**) provides an Open Access repository for published content created by academics who do not have an institutional repository; JORUM (**www.jorum.ac.uk**) is a repository to encourage the sharing of learning and teaching resources; and SUNCAT (**www.suncat.ac.uk**) is a union catalogue of serials holdings across UK universities. Deposit in the Depot and access to JORUM require authentication. SUNCAT-contributing institutions can see their own data alongside the catalogue details of other institutions. They can also download catalogue data from SUNCAT for use in their local catalogue; this helps to improve the standard of local catalogue records through sharing
- The normal process for commissioning a service when content is supplied is for bids to be invited by JISC against an invitation to tender (ITT). The ITT will include a service specification. Since the process is competitive, there is a tendency for bidders to limit the functionality to that specified in the ITT – or to provide costed options for enhancements, which may or may not be funded
- The licence reflects the nature of the product and the particular audiences. The task of the successful bidder will be to produce a service matched to the needs of the defined audience that satisfies the requirements of the ITT and the licence (which is usually negotiated before the ITT is issued), within a limited timescale, and within the budget agreed
- There are routes to service development other than an ITT. For example, there may be a particular requirement to develop a new service from scratch or to enhance an existing one. These may include formal user requirements. In these situations EDINA may have the opportunity to consider audience need as part of the development process. Digimap (**http://edina.ac.uk/digimap**) is an example of a service that evolved with audience input. It started as an eLib Programme project and delivers Ordnance Survey maps and other digital map data to academic institutions. EDINA defined the requirements, developed the demonstrators and then implemented them as full services. The process of specifying user requirements facilitated feedback on the performance of the demonstrators

- At other times JISC defines the user requirements before commissioning EDINA to implement the service. Occasionally EDINA carries out formal user requirements analysis, but often this is quite hard because someone else (JISC) has already decided what the content should be and how it should be used and by whom
- Projects that involve building trial or demonstrator services tend to have specific requirements-gathering activities. Scenarios and use cases are tools that are used to help determine user and functional requirements
- It is important not to make a service too specialised so that 'everyone' can get some benefit from the service. JISC looks for service uptake; institutions are expected to subscribe. It is necessary also to prove that there will be wide demand, ie the mass market is important. Digimap, for example, could have focused just on geospatial data professionals, but this would have resulted in an expensive service that benefited only a small community. The same is surely true for museums where there needs to be something for everyone
- Where feasible EDINA will produce a specification of user requirements before service development starts
- It is essential to be clear about the business model that underpins a development. Where does the money come from to sustain the service when there are small groups of users? Collaboration can be important – but there may be restrictions to this, for example the licence may have been negotiated to serve a particular community and thus the service cannot be made available to everyone
- EDINA has collaborated with a number of Scottish organisations – the Scottish Library and Information Council, the National Archives, etc. – to develop services for wider audiences across Scotland. It also collaborates with MIMAS. Under the Economic and Social Research Council (ESRC) Census data programme (http://edina.ac.uk/ukborders) EDINA collaborates with six other organisations to provide census data; this started as a competitive bid but with partnership working within it. EDINA also collaborates with many organisations working on current technical issues and development programmes

### Engagement with users

- There is user engagement through stakeholder groups and user groups, but it is hard to get representative samples that extend beyond those already using the systems. EDINA has site representatives in institutions and usually works through these for promotion and user support. Feedback comes through the site representatives on user evaluation of services and sometimes this does produce a significant number of responses. Various other approaches are used
- JORUM has user focus groups and usability testing and these groups were not self-selecting. It also runs an enhancement group to help determine service enhancements and their priority. Last year there was a study looking at users and stakeholders of JORUM. This was reported to both JISC and the JORUM steering group and it has informed planning of JORUM over the next period. There will be further usability testing of JORUM in the next period

- There is a Geo-Forum for Geo services but there have been problems with sustaining user engagement. There are particular difficulties with engagement where lots of different groups have a vested interest in a service
- Often EDINA has only a very small window to produce a new service, maybe only three to six months, which does not give enough time to design and run a workshop, and people's diaries fill up quickly. Therefore educated assumptions have to be made. In some cases there are internal people who know the specifics of an area of knowledge that can be consulted
- The VSM demonstrator (http://edina.ac.uk/projects/vsmportal) is an example of project activity that included planned engagement with users through paper prototyping and usability testing. This involved consultations with representative users including students, mature students and learning and teaching staff. This level of activity is not always funded or possible, though

### Discovery

- To produce aggregated services calls for use of middleware such as the OpenURL Router (http://openurl.ac.uk/doc – maintains a central registry of institutions' OpenURL resolvers). This is important not only for aggregation but for also increasing discovery
- There are a number of approaches to increasing discovery. The Film and Sound Online service (www.filmandsound.ac.uk) now exposes its metadata outside the service authentication so the service and its content can be discovered through Google. E-prints deposited in the Depot are also harvestable by Google and other JISC/non-JISC services. Although EDINA can provide functionality to search in front of authentication to allow more people to see the metadata, this is not possible for some abstracting services where the metadata is actually a key part of the value and is embedded in the product. In areas such as EDINA's Geo services it is not possible to expose data outside of authentication due to licensing constraints
- In the case of the Go-Geo! service the data is metadata about data held by other university departments who may have their own restrictions on who can see what data they hold. A bigger issue though is access to the data itself. Users want to be able to go from the metadata to access the data itself. The team has looked at personalisation and has discussed it with JISC and it may be developed further in the next phase of the Go-Geo! service. There will be barriers to personalisation. Often, because of the way access management is implemented, Service Providers don't really know who the users of their services are
- Applications such as personal map chests (Digimap) and lightboxes (Education Image Library) improve the experience for regular users, but that is more customisation than personalisation. Personalisation is tagging, user generated data, information about the user, modelling and the like. EDINA could provide 'views' on to the data it holds to address the needs of different groups of users. Location-based services are a huge area, but EDINA has not always had the chance or the resource to explore these issues fully and to fully exploit the data that these services hold, eg by providing access via mobile devices. However,

JISC is now beginning to prioritise the enhancement of existing services rather than investing mainly in new services and this may encourage more refinement and development of existing services

- EDINA produces flyers and posters that go to site representatives for the marketing and promotion of services in institutions. The success of these naturally depends on the skills and priorities of those representatives
- Demonstrators can help since they enable people to understand both the content and the proposed strategies for presentation; these users can then make practical suggestions for changes or enhancements. In terms of future trends, most projects include a work package that calls for technology watching to ensure that all current developments are known and consideration is given to whether or not they are appropriate for this development
- When considering the specification of a demonstrator it is important to consider the use of shared services but the implications of their use must be understood. While GeoCrossWalk was to be used in one of the original Common Information Environment demonstrator projects use of its full potential in this context is restricted by the data licence
- JISC has a view which is to encourage cross-sector use of services, but content providers may not agree with that view. It raises technical and practical issues. It is important to avoid decisions being taken outside of the normal processes

### Evaluation

- EDINA analyses logins and service usage and has a service level agreement against which it makes regular reports to the JISC Monitoring Unit (**www.mu.jisc.ac.uk/servicedata**). Some specific monitoring techniques are based on custom scripts written by EDINA. Google Analytics are also used, along with a web analysis package
- However, it is important to remember that there is much more diversity in the nature and needs of students now. Also, when responding to an ITT, EDINA is competing against others and therefore has to strip out the things that are not necessarily core requirements. This limits EDINA's ability to undertake significant user testing or, for example, to use personas
- The development of personas could be a JISC-funded project in its own right. It is important to focus on needs and tasks of audiences. Experts need to be involved to help 'kick off' and generate interest in new services with new datasets
- Students may not see the need for a new service without promotion and enthusiasm from academic staff. Who could have seen the likely impact of Google Earth at the point when it was launched? It is also important that service developers/deliverers in this community have a chance to take more risks with new types of service or enhancements to existing services so that we have an opportunity to unlock new ideas
- Services usually go on to a maintenance basis once set up and there is limited or sometimes no money to continue to review and develop unless this happens when the licence comes up for renewal. Established services also run the risk of being forgotten!

- EDINA is now being asked to consider extending Digimap Historic (http://edina.ac.uk/digimap/description/historic.html) into schools, but it seems that there is no money to review and revise the interface to make it more suitable for young people. There seems to be an assumption that the same interface will be usable by all types of user. In order to deliver a useful service, an interface needs to be designed to meet the needs of the audience; school children may require a very different interface from that used in higher and further education
- In terms of demonstrating value, with the Geo services the commercial value of data downloaded has been established showing the opportunity costs of providing a central, comprehensive service
- JISC sometimes commissions reviews for categories of activity or content (for example portals or film) where consultants talk to a range of users
- Some services might be of great value to a few people and those people may be key income generators for their institutions; the number of users is not always a good indication of the value derived by the institutional subscriber
- Operating budgets for services seldom include resources to review or for evaluation. When evaluation is funded, it is often as part of a development project and thus it may then be done before any real use or potential service has been established. For real success, services must get past the early adopter phase and be embedded into teaching. Projects are often over before embedding is possible (the e-MapScholar project found that it took typically 18 months for a new resource to be embedded in teaching by those who were early adopters)
- Evaluation of access to services: The Access Management Federation for Education and Research (www.ukfederation.org.uk) was created by those in universities, but is now meant to be used within schools as well. The Where Are You From (WAYF) service, for example, will be used by years one and two within schools, so the interface will need to change. But a design for five-year-olds, also used by universities, is hardly better than a design for universities that is also used by five-year-olds. A more sophisticated approach is currently being investigated, in which heuristics based on a range of factors, such as recent use and IP address range information, will enable intelligent default selections to be offered to different audiences

## 2. MIMAS

| Interviewees |
| --- |
| Keith Cole, Director |
| Ross McIntyre |
| Jackie Carter |
| Joy Palmer |

## Audiences

Commissioning only describes some of the activity that MIMAS undertakes. There is emphasis on sustained development and there are groups to look at enhancements of existing services and of developments. There is a formal, committee-like structure. With the JORUM learning and teaching repository, for example, there is such a structure and users are feeding in their ideas (**www.jorum.ac.uk**). Discussions focus on the backend system, the interface and IPR. It has a wide-ranging mandate and is an effective way of developing services.

MIMAS has also carried out external user evaluation and has looked at ways of evaluating the performance of existing services. These activities have grown out of project funding and MIMAS has decided to build on the back of the results of the project; this is not directed by JISC.

The Web of Knowledge (**http://wok.mimas.ac.uk**) provides a single route in to Thomson's scientific products. This is a direct contract with Thomson and not funded by JISC; however JISC negotiated the licences. At one stage MIMAS hosted the data, but not since bandwidth restrictions have gone. JISC, Thomson and MIMAS retained the Web of Knowledge helpdesk function for the academic community. As part of that JISC wanted to see a forum established to deal with enhancements through which requests could be fed back to guide the development of the platform. There is a Web of Science enhance committee (Web of Science is a sub-set of the Web of Knowledge, in which all constituencies are involved including representation from the JISC user group). MIMAS's role is to capture anything relevant that comes in. This is categorised and fed into the Web of Science database, and every six months a report is produced for the committee to see, in which suggestions and requests are weighted to show the level of demand. This is a joint report from MIMAS and JISC and JISC also has a wish list of features. Thomson's Product Director shares planned changes and developments. There has just been a complete revision to the interface and MIMAS had to explain and interpret this for the user community. This approach to user engagement is being repeated for JORUM and also other systems. Feedback comes from any user of the system, for example, confused undergraduates; a key group is the local support librarians; and a lot of feedback comes from high level and demanding academics – they always have a sense of urgency. Feedback also comes from university training staff and others.

It is worth noting that most interaction is via email and most of it arrives through the helpdesks. This feedback is enriched by an analysis of all the questions and answers in the helpdesk database. These are regularly reviewed to look at the need for service enhancements. The new Web of Science interface reflected the comments that had come from users across the world. The UK user base is the most engaged with this process and is well ahead of everyone else, with Brazil second! Thomson listens carefully to all this which is critical to success. Thomson use personas that they apply to the various kinds of users and these get tested all over the world. MIMAS is able to run the proposed changes against the helpdesk

wish lists and sometimes tracks back to the individual requests to get feedback and try to establish whether changes actually make a difference to the individual user experience. There are thus close links with the communities served.

*There has been very interesting and illuminating information back from the first stage of the work and the MIMAS team is watching closely the model that Intute is applying…*

The difference with the JORUM process is that the software vendor is not in the room unless specifically invited. It is therefore more a forum to gather the community together – teachers and teaching support staff – to establish what they need and want. The JORUM forum collates user requirements and passes them on to the software vendor, assessing user needs within the context of library and archival services provided through the Archives Hub (**www.archiveshub.ac.uk**) and the CURL Online Public Access Catalogue (COPAC) (**http://copac.ac.uk**). A usability project is just in the development stages for the Hub and this presents some unique challenges. There will be a modest usability study and perhaps also a market research study to look at the needs of the users. The COPAC and Hub are mainly used by researchers, not students and teachers. What do they really want? There is feedback from the helpdesk but not enough detail. Personalisation is being looked at, and understanding the context and needs of the users. Caroline Williams, the Executive Director of Intute, has commissioned a market analysis for Intute – what are users' expectations? There has been very interesting and illuminating information back from the first stage of the work and the MIMAS team is watching closely the model that Intute is applying; discussions about these approaches are now beginning and several focus groups of students and academics have been formed to look at other MIMAS services. It is evidence that, while there are good levels of usage overall, there remains a big untapped demand. Consideration is also being given to how community content can be incorporated, something that is already at the heart of JORUM but is equally relevant to the Archives Hub and COPAC too. Both 'putters' and 'getters' will be important in the future.

MIMAS is very keen to discover how people are using resources for research and for teaching out to the community. Although the main focus is very much on the needs of higher and further education, some services are available through Open Access to wider communities. JISC and the ESRC are the major funders so higher education is the main audience. Both the Crossfire chemical database service (**www.mimas.ac.uk/crossfire**) and COPAC are international services.

Opening up to new audiences fits into technical development trajectories and growing communities of practice – 'the waterfall effect'. The library and archive services are mainly used by professionals to let the world know about their collections and innovation can help to build new audiences, but how should user generated content be dealt with? These are challenging, difficult issues since incorporating user content may be in conflict with the world of librarians and archivists. MIMAS is starting to put recommender systems into COPAC and in the present enhancement programme that may extend to social tools, but there needs to be more research before implementation. There is a chance that too many bells and whistles might start to alienate existing core audiences. Research is being done by the Developing Personalisation for the Information Environment (DPIE) project (**www.jisc.ac.uk/fundingopportunities/funding_calls/2007/09/personalisation_ie_2**) and others. Of course, some of the resources are limited by

commercial licences. The International Monetary Fund databanks are limited to the higher education community. There are IPR issues also with user generated content.

A development has just been launched to enable 'click through' from COPAC to Google Books and concerns have already been expressed by users on whether their identity is passed to Google – it is not, but users do have concerns. At a recent DPIE workshop privacy was high on the agenda. Social networking and sharing can be positive, but privacy and authentication are issues. Furthermore, some services are very complex – the census database, for example – and widening access would call for considerably more interpretation of the service and of the data that present researchers need. Is that worth doing? Sometimes providing a service to a new audience might call for a complete rebuild of the interface; universities and secondary schools may have very different needs. Research needs data while the school curriculum may need prescribed subsets of the data.

Most MIMAS services have some form of evaluation that has led to enhancements to better meet user needs. Another issue for the research data services is how to provide international access. Lots of data is now shared internationally. A good example of new uses for existing MIMAS services is the use of radar data-created images from satellites by the Morecombe Bay rescue team; real time access is possible and the images allow a clear view of the terrain unfettered by cloud cover.

### Discovery

The current Resource Discovery Review talks of the discovery to delivery supply chain (D2D) and calls for more integration of services. How can the user get directly to the item wherever it is? Personalisation is also on the agenda in the review. Decisions on funding have yet to be finalised for the review. Through COPAC and ZETOC (**http://zetoc.mimas.ac.uk**) it is hoped to integrate the discovery of tables of contents and articles. COPAC will need to integrate with Shibboleth. There is already a reusable Machine Readable Cataloguing (MARC) standard and the Google click through using the Google API. MIMAS will be looking at integrating and aggregating resources across the Archives Hub, COPAC, ZETOC and Intute through Project Fusion. This will include investigating how a combined interface could allow users to work seamlessly between services and personalise their use. There are lots of other projects across different services looking at personalisation. 'Pesonalisation' and 'aggregation' are featuring in a lot of project titles currently. In addition, the Intute Repository Search project is designed to create a proof of concept model of semantic harvesting for new interfaces and content. This is using Autonomy (**www.autonomy.com**) to see how to create new sets of data and will look at other software products as well. All of these projects are in the early stages.

Much work now will take advantage of the commitment in the past to open standards. Both aggregation and integration show how important open standards are. The same can be said for ZETOC where there is full support for open URLs, web services and Z39.50 (which still represents 50% of ZETOC use). OpenURL (**www.oclc.org/linkmanager/about/openurl.htm**) is interesting since it identifies both the source of the request and a description of the item (book, article, etc.).

This can be hidden in a web page and can be picked up by full text search. Google Scholar uses a system called COinS (http://oCoinS.info). This gives users the ability to send items to where they want to use them. It has moved the model from the publisher directing where it should be used to the user directing it.

One of things that JORUM is doing is building resources for a specific community using a client and allowing embedding into a particular local set. One issue is that record description can be pulled back, but authentication is still necessary to access the content. There are plans to move towards a more open approach to JORUM in the future. It is currently behind Athens, but there are hopes to have a more open section. Already, where institutions want to share resources across the open web, they can do so subject to licence agreements approved by all stakeholders.

*It is important to understand the landscape and where things are going. Anyone looking at the future of Web 2.0 must consider the 'so what?' questions and what might be the consequences*

Future watching is an important part of MIMAS's mandate. JISC has commissioned several studies – the DPIE study, for example – and there is lots of engagement with conferences. It is important to understand the landscape and where things are going. Anyone looking at the future of Web 2.0 must consider the 'so what?' questions and what might be the consequences. Any steps needs to be measured and assessed against user need; it is far too easy to get drawn in without thinking of the context of use. The Google Generation report is interesting. Yet it is still the case that lots of the use is anonymous. Where there is secondary registration it is possible to track types of audience use, but there are often problems of how stuff is used at institutions. The Google Generation report shows that everyone finds it hard to navigate the information landscape and that finding must influence the design of services. There is a growing expectation of finding stuff from a search string in a simple search box, but the reality is there is a long journey to take before that can be done for research resources. There are concerns about the ability to apply such searches across all of the JISC Services. It may be hard to achieve with deep searches of archival content. These are key questions for MIMAS.

### Evaluation

A good example of impact is the project looking at providing online training in hairdressing. As a result of a Department for Education and Skills (DfES) report highlighting the value of the programme, the Learning and Skills Council decided to continue development. It was apparent that a mobile-based interface was needed. Once that was created students began to use the system in the workplace – in salons – much more and are more engaged that they were previously. Other examples include the ESRC-funded services – census, economic and social data, etc. – where the funder is very keen to know the impact the services have. It is hard to capture output, but looking for citations of where the resources have been reported in research is helpful. This means reporting back on key publications.

A web usability test of the Archives Hub is being conducted. This will start in April 2008 and will use standard search scenarios and watch how people apply them. The study was designed by the Hub managers and this will ensure it relates to the users. It is also worth while looking at search terms that fail to deliver anything to

show where the gaps in metadata are. MIMAS uses Google Analytics on some services and there must be more work on enriching metadata. It is possible to measure and collate the data but it takes time to do anything useful with it.

Impact is a problem area. MIMAS is often required to make comments on impact but it is usually difficult to measure it effectively at the end of a project that may have lasted less than three years. Is it a fair question to ask? There maybe needs to be long-term follow-through as in JORUM. It is always hard to measure what has really happened. The question on widening out audiences beyond higher and further education is a difficult one and the sector may not really be ready to answer it! Even given the audiences that MIMAS already serves – academics, researchers, students and teachers – it is hard enough to understand needs. It would be impossible to plan for opening all services to everyone and it is not the context at present. It is important to be selective about what should be made interactive and why.

*People's views are not always heard in a constructive way. This means going beyond resource discovery to enable people to use the services more effectively*

The work being carried out by the National e-Science Centre and others on the use of the Grid through the e-Uptake project (**www.ncess.ac.uk/research/hub_research/e_uptake**) and the JISC through the e-Infrastructure Use Cases and Service Usage Models (eIUS) project (**www.eius.ac.uk**) will show how to exploit the Grid better. What are the key barriers to exploitation? There has been a lot of emphasis on resource discovery as an end rather than what happens when researchers start to integrate resources in new ways. How does it fit into workflows? Resource discovery is just the first step. There are no local support structures to help people to get stuff successfully in useful ways. People's views are not always heard in a constructive way. This means going beyond resource discovery to enable people to use the services more effectively.

# 3. Oxford Internet Institute

| Interviewees |
|---|
| Bill Dutton (BD) – Director |
| Tom King (TK) – Web Developer |
| Wolf Richter (WR) – Doctoral Student |
| Eric T. Meyer (EM) – Research Fellow |

### Audiences

CHRIS BATT (CB): Provided a short introduction. There is a need to develop systems that make it easier for people to start new learning journeys – getting people into the discovery of new resources. This started with the work of the Common Information Environment Group, and JISC continues to be right behind the programme, which is wide ranging in its scope, but until now there has not really been any serious thinking about the whole supply chain from end to end.

BD: The Oxford Internet Institute (OII) is working on new approaches to aggregating content produced by academics within the OII, the university and across other UK universities. The question is how to connect together the outputs of research and make it visible to the world on the web. Tom King is working on simple strategies for blog aggregation. Wolf is investigating Digg News, a site that enables users to tag distributed content across a wide range of news sites. Eric has funding from JISC and the Arts and Humanities Research Council (AHRC) looking at how to get data out of the Internet Archive in ways that are meaningful for the researcher. The Internet Archive (the Way Back Machine) is a partner in the project.

From the outline, it sounds like SCA is trying to find ways to share audiences rather than develop new stuff. The obvious question is, 'Why isn't Google sufficient?'

CB: The reality is that very few public sector sites ever appear on the first page of Google hits. The British Library occasionally gets on to the first page for some of its most famous items.

BD: Surely the BBC would make it.

CB: BBC News items will occasionally appear but there is a more general issue about the lack of access to high quality public resources through public search engines. The watch story is described here.

BD: Of course, very few people will ever go through 20 pages of hits. People tend more often to look at the first page, revise their search terms and try again, but it is certainly dangerous to assume things are improving. It seems to work for the OII site. However there have been no surveys to show objectively the degree to which search refinement has become the accepted approach or how successful it is as a strategy.

EM: Ten years ago there was work to look at how the existing search tools could be polled for shared results – search all of them and see what hits surface in common.

TK: There used to be a search engine that searched all the obscure search engines. It was called something like Deep Web Search (see for **www.closerlooksearch.com**).

CB: It will be important for SCA to come up with some strong messages. The UK has a major asset in the public content that is available – the 'Crown Jewels' of digital content that could have global importance. It will be important to think how this might be exploited in the future. It is as much about politics and sociology of the institutions as it is about new architectures or consistent use of standards. And of course there will often be competition to deal with.

BD: Shall we move to the first of the questions?

EM: For the OII a key constituency is other academic researchers. We hope to create a single repository where all research resources can be accessed; the intention is that this repository will incorporate all the content this is being produced. It is a summer pilot project this year for the university – creating a new digital archive.

CB: Are you considering the sorts of uses that these researchers will put the Research Archive to?

EM: It will certainly not be something of interest primarily to the general public. It will be highly specialised, but include all papers and publications.

CB: That point accepted, might it not be worth considering how the approach might be used more widely? The process might be relevant to others?

BD: OII is constantly thinking about how to design things useful to wider audiences. We make all of our lectures and papers accessible to the world, free of charge for educational purposes. We are actively using the blogosphere to reach wider audiences. Blogs make sites alive.

TK: Things have changed over the past two years. At the beginning there were concerns about how individual voices might be mis-interpreted. Now there might still be concern about tone, but the issue is more focused on the utility of the content and systems being developed to pull down relevant entries from different blogs to aggregate the collective views on a topic. This can then be exposed for others to read. OII is working at present on how to paste together keywords and tags into external services. A prototype aggregator now pulls together authors' tags plus Google and Yahoo! blog searches. Keywords are very individual so there is a need to create machine algorithms to identify patterns and connections.

There is now also a Yahoo! API service where it is possible to syndicate sending text to machines on the web and get back a list of the keywords.

TK: Another point to make about the proposed university research archive project is that it is a tool also for OII to use. If successful, the system can be used to aggregate information from all departments in one place. If we embed this in the OII site it will be a valuable asset to staff and researchers.

BD: Is it intended that there will be data on what is used?

TK: The plan will be to enable us to access results from within the OII website and integrate it with the OII website.

*It is important to make stuff available, but the emerging way to guide people towards interaction is now through blogs and discussions. This leads to new ways to think of the design process…*

WR: The whole question of design is less about a product (a set of protocols or software) and much more designing the interactions. How do users actually interact with the information? This is a paradigm shift, moving from the question of how can a university publish traditionally to how can it get its research surfaced in the academic and public blogosphere? It is important to make stuff available, but the emerging way to guide people towards interaction is now through blogs and discussions. This leads to new ways to think of the design process – not how the information is structured, but how is the information about the information structured and disclosed?

CB: Reaching new groups is an important priority for the SCA.

BD: I recently wrote a blog on the forthcoming OII autumn conference and it produced a two to three day leap in hits on the blog. Over time, interest in content goes up and down. Blips in viewing indicate that people are taking an interest. But search is very time sensitive.

TK: Another example is the blog Larry Lessig wrote suggesting he should run for President – traffic shot up dramatically (**www.lessig.org/blog**). There is certainly a definable readership for blogs but blog content does surface elsewhere. When interpreting web analytics the single most important features are arrivals from referring sites or direct to the site. It continues to be confusing when there is no referring site. Suddenly a swarm of traffic will appear from nowhere with no identifiers.

CB: Could these new behaviours be useful when looking at content and discovery in other areas, considering other communities of interest? These web-focused communities might have shared characteristics with communities in other subject areas.

WR: It is very hard to create community artificially. Most emerging communities of interest seem to reach a point when they either die or really take off. Most information aggregators work in special interest areas – Slashdot, Digg. With these the community is self-selected when people make a choice to join. It would be possible to find people with passion in other areas and the approach might work. Agriculture might be a topic. The community could be allowed to grow and evolved and allowed to plan how it wished to develop. Google started life by using experts to spot useful sites. Do we now have for certain areas experts that could be put together to lead others through, to build new knowledge spaces that generate a buzz and get people feeding in?

CB: There are lots of examples of possible groups. It would be interesting to take the concept and try it elsewhere.

BD: This is important for the Distributed Problem Solving Network. People see Wikipedia working well, but try setting up a Wiki in the OII or any particular organisation and nobody comes. Top down creation tends not to work. How does one foster an environment where such communities could thrive?

CB: Brief description of the Powerhouse use of Web 2.0. There is interest around subject areas: the British Museum and the 'Egyptians website' dilemma.

BD: This is not a problem for OII since the task is to look for unique stuff to do. We need to be at the cutting edge of development, so we are willing to experiment.

CB: That is the opposite of the world of the SCA. Is OII doing anything on evaluation, especially focused on evaluation of outcomes rather than quantity – how are people's lives changed?

BD: OII has just finished a research project that is saying that Web 2.0 and social collaboration are interesting but it is virtually impossible to show what difference they make in terms of outcomes. No generic concepts emerged to capture the performance of these networks. Of course, if a site is viewed a lot something must

be going on. If people contribute to a site, eg Digg, it must be useful. Wikipedia draws in a lot of contributors, but most work is focused on input costs and little on the economic value of services or increased efficiency; it is not easy to demonstrate.

CB: Perhaps what is needed is a more disaggregated web: separate shopping, learning, cultural heritage, social networking, etc. In the public domain you need to show why money should be spent.

TK: Pop-up questionnaires are self-selecting and only certain types fill them in. They are dangerous.

BD: These kinds of things only work for certain types of site. It is possible to use web metrics to analyse Digg and other news aggregators and the like to see what connections are taking place with other services. There needs to be much better use of web stats. Impact would be harder to say; it is a really tough problem. It might be better to move away from looking at sites and focus directly on the user.

CB: It might do on a small scale to show what is and is not possible. Don't need to find all the answers – need to produce a narrative.

BD: Is it possible to disaggregate all of the variables in assessing outcomes? Everyone wants to know performance compared with competing sites. It is helpful sometimes to flip these kinds of problems around. What, for example, if OII did not have a website? OII would be invisible and would have no credibility with peers. OII is organising a forum on how people use the internet, working with the BL. It would be good to get the Work Package One work and have a discussion around some of the issues. What will web do for museums, libraries and archives, etc.? Will it support or change the audiences?

Being all over the place is the place to be…

# 4. Publishers Licensing Society

| Interviewee |
| --- |
| Alicia Wise, Chief Executive |

The Publishers Licensing Society (PLS) should be seen as a critical component of the publishing supply chains that it represents. There are differences in the histories and therefore approaches of different parts of the publishing sector (for example, book publishing and scholarly journal publishing) but there are common themes and priorities that the PLS works to develop. These include, obviously, the development and securing of rights systems that support the interests of the creator and of the publisher, but it is also in PLS' interest to ensure that licences specifically and copyright more generally work to empower the user. The supply chain cannot be effective unless the user finds the product relevant and accessible.

One of the key challenges at the present time is to exploit better the technology and infrastructures to link these key messages about the nature of rights and licences to the content that they are designed to support. It is certainly true to say that copyrights, grants and licences present a complex landscape and the state of technology certainly does simplify this complexity. PLS is working to pilot standards. The Online Information Exchange (ONIX) (**www.editeur.org/onix.html**) is a tool for the management of licences online that is similar in form to the MARC standard. ONIX enables the exchange of information about grants and licences using a simple XML display. The pilots are currently focusing on the higher sectors in the UK and the US. The toughest part of this is to find sure methods for connecting the ONIX record to all parts of a 'document' whether digital of physical. There is interest currently in Spain, Norway, Canada, Australia, Argentina and the US. ONIX is testing semantic tools and the intention is that the information will make absolutely clear to the user what the licence allows them to do. Similar standards are being developed for film and music.

*There is scoping work being done to produce a campaign that will ensure that knowledge of the importance of copyright, etc., is embedded at all levels*

PLS is also leading work to simplify licences (NISO and Shared E-Resource Understanding (SERU)). This work will cover terms and conditions of use. An EU grant has just been received under the i2010 programme for the Australian Research Repositories Online to the World (ARROW) project that will use ONIX as a tool to enable libraries to attach the ONIX standard to objects that they have digitised. The ARROW project is being conducted in partnership with the BL, Bibliotheque Nationale de France and the National Library of Croatia. It is technology driven and is focused on publishers and rights managers. There is scoping work being done to produce a campaign that will ensure that knowledge of the importance of copyright, etc., is embedded at all levels. Beyond this there are plans to begin to look at changes to relationships in the future. There are already forums in place to bring together publishers to discuss the future, but there are differing views and traditions in different parts of the sector. This makes it hard sometimes to build a consensus. It is helpful that there is now the JISC Publishers' committee, and Alicia Wise is planning to bring together relevant people from publishers in March to begin to explore what future priorities and relationships might be.

PLS has now been working with the Royal National Institute for the Blind (RNIB) for seven years and a more radical model of accessibility issues for publishing is now emerging (**www.rnib.org.uk/xpedio/groups/public/documents/code/InternetHome.hcsp**). It is evidence that more impact for the visually impaired could be achieved if the needs of those special groups were considered higher up the publishing chain – to influence the practices of the producers. For example, publishers could supply machine readable files at the time of publication so that the RNIB could convert them into XML format and make them available from that in whatever format is required for the particular user, but tagged with ONIX so the product could be provided through commercial outlets while protecting the copyrights attached.

Publishers have remained cautious about the future of e-books until recently due to the significant losses made in the '90s when e-books were first viable. HarperCollins have now begun to offer suites of e-books and other publishers are expected to follow this lead. It is evident that all of these changes are likely to bring about new ways of delivering published material to users in coming years.

# 5. School Of Library, Archive And Information Studies, UCL

| Interviewee |
| --- |
| Dave Nicholas, Director |

The core activity of the Centre for Information Behaviour and the Evaluation of Research (CIBER) (www.ucl.ac.uk/slais/research/ciber) is to provide content providers of all kinds with data that they can't get for themselves and who consequently have no clear picture of how their services are performing. Deep Log Analysis provides a refined picture of what is happening in virtual spaces, and takes hit counts much further than previously possible. People measure activity, not use and not users, and the task is to link hit data in ways that turn a mass of activity into an understanding of information seeking behaviour in groups of users. Such information makes it possible to work out strategies to deliver better the outcomes of the information provided. There is a need to identify common themes and attributes of users: status, gender, age, location, etc., and then tie all the activity information together in meaningful ways. This is what is now being done for the Research Information Network (RIN), studying the use of scholarly publishing. Libraries seem fixated with the cost of journals. It dominates what they do. If you ask librarians or publishers what are the benefits of 24/7 access to all scholarly output they will speak warm words about the value to scholarship but the decision makers may well ask that the value be judged against the value of spending the money on a new car park!

To begin with the benefit/outcome of online delivery was the access – the level of use. But does the new form of delivery mean students are taught better? The media was the message, but perhaps not now. There is loads of activity, but it appears to be 'drowning man' stuff: terrain viewing rather than reading and learning. This raises questions about digital literacy. Lots of hits are just searchers passing through; they put in the wrong word and got to wrong place. This is visible in full text downloads. There are millions of downloads that then get printed off, but do people actually make use of them? CIBER is trying to get a much deeper understanding of activity and then relate it to satisfaction. It looks at length of stay, how behaviour links to other datasets: journal outputs and citations, for example. What is the relationship between use and quality? The best research departments use the most resources (say librarians), but is it true? Can it be proved? The work has been done in health and we are now doing it for scholarly publishers.

There are lots of things that can be done. CIBER is working with the JISC e-Book Observatory, dropping 40 e-textbooks into 120 universities so that they are freely available to all, measuring use, both quantitative and qualitative (**www.ucl.ac.uk/slais/research/ciber/observatory**). How do they go down? What is the impact on hard copy sales? We need to get people to experiment, 'pebble in the pond' style. The virtual workspace makes it possible to conduct experiments. The feedback can be used to change and develop toward the perfect outcome and the scale is fantastic. A recent online benchmarking questionnaire got 23,000 replies – the biggest survey done so far. The process can thus be collaborative and everyone wants to prove the benefits. Working together on this will get us closer to outcomes and benefits. Given the evidence that shows there is lots of failure at the terminal it looks as though a load of time and money has been wasted on a society-wide scale. Nailing the benefits will begin to show what it all really means.

*It is easy to show this apparent bad practice. Like a blind wine tasting, make them all anonymous and ask the question: what is the perfect outcome as supplier or taxpayer?*

The approach is very transferable. CIBER has worked in a range of sectors including newspapers, charities, NHS/Department of Health, with publishers and with the RIN (**www.ucl.ac.uk/slais/research/ciber/downloads**). So long as it goes on in digital space the type of space does not really matter. It is hard to think of any problems in dealing with new areas. Today the scholarly world is now not so well ordered with aggregation services and the like. Not everyone wants to know about service performance. Take the RIN work. It would be possible to identify similar physics departments in a bunch of universities. It is likely that some won't use digital resources much at all while others will be fanatical users. It is easy to show this apparent bad practice. Like a blind wine tasting, make them all anonymous and ask the question: what is the perfect outcome as supplier or taxpayer? The methodology provides answers to the questions about behaviours, but it is then essential to go and talk to people on the ground to see what is happening and why. The logs just raise the questions; it is completely evidence-based. They show what does and doesn't happen. It is then possible talk about what is good behaviour and what is bad. Deep Log Analysis is a prod to get people to think about what it all means. It is essential to identify where good outcomes are delivered and then to use the evidence to persuade funders. Provosts understand a compelling and outcome-based narrative.

With regard to the impact further up the supply chain, the main problem when the work started was that the people who commissioned it realised the value, but people higher up in the organisation really did not get it and this is still the case. Few look at this kind of data and then make strategic change decisions: stop doing this, start doing that. Take the example of newspaper production. Traditionally journalists have been paid on the basis of where in the paper their work appears – so page one is better than page 200. The same rules seem to apply online and yet in the digital world it is always the sport that is read most widely. The old paradigm remains. It is important to get to the people who control the purse strings. CIBER evidence may be based on up to half a million users; how can that be disputed? But the system still shows inertia to change. The critical question is how to shift the crowd. The beauty is that people can try stuff to see whether it will work. Too many people seem to get stuck in 'digital concrete'. This is visible in the previous work to develop new digital tools for NHS information services. Digital interactive TV,

kiosks and the like were assessed – five years of evidence in a database then the system was designed. The advice was to keep technical solutions free and easy to be flexible to change, but the system was built and then everyone hung on to it as a final unchanging product.

Intute is designed to be a gateway that provides a haven from the storm. CIBER has evaluated it, and there is an amazing amount of use. Intute is very different to most other resources. There is a massive need for something beyond Google and other public search engines. Intute has a lot of room for development, but the level of use shows that there is a need for good stuff: a means of escape from the Wild West. When it was just a case of finding books and other traditional resources it was straightforward, but now strategies for living are being piped on to the web. It is vital to make clear the public imprimatur and provide people with a mental map of the landscape so that all can benefit.

CIBER is creating an observatory for the future. The great thing is that patterns only emerge once new services are rolled out. Predicting trends has been very hard without some evidence to work on and then adapt to. For example, the NHS touch-screen kiosks were rolled out for the disadvantaged: the poor and the elderly. When the programme rolled out it was found the biggest user group was under-15s. Should they be banned? But, of course, one third were carers. The next biggest users were kids doing homework and developing digital skills. The elderly turned out to be the smallest of the user groups. Logs show how things are going down. It is essential to study patterns of use. The most interesting work CIBER has done relates to material already on the web often discovering unexpected user communities. There is an amazing demand for information services. The products are really attractive and access is much easier than traditional hard copy resources: better than the library. Scholarly information is very much in demand. The demand for public information resources is apparent; the problem for public authorities is more than just the tension between commercial interests and social and public value. There are occasions when the patterns revealed may raise further concerns in the minds of Service Providers. Both in studies of Intute and BL Learning, it turned out the majority of users were foreign – mainly from North America. Certainly the Brits were outnumbered. Some institutions have become nervous about the implications of such information – British taxes helping foreigners to learn, for example. What was previously constrained to local use may now be available to the whole world – a problem faced by the BBC also in relation to public access and the global commercial market for BBC products conflicts of public policy and commercial interests.

The methodology now exists to gather feedback and conduct evaluations on a massive scale and there is a big demand for these tools. Today a five-year plan will not last five minutes! Flexibility to evolve is crucial to any online system. It is good now to look at the massive demand and it can be measured better than ever. The evidence of the Google Generation report and the Virtual Scholar highlights the need for a massive boost in people's ability to use and exploit networked resources. It is important not to let all this energy go to waste. The conditions are now right to bring better understanding and coordination to the journey

towards a knowledge society. That will need the removal of inequalities in learning opportunities, to bring the user into the policy and decision making equation much more. It is still Wild West time, but more order would start to tame the complexities and uncertainties of the existing landscape.

# 6. UKOLN

| Interviewee |
| --- |
| Liz Lyon, Director |

## Audiences

UKOLN is slightly different from the other organisations involved in the SCA since it does not create large amounts of content. The model is business to business. UKOLN audiences are higher education plus the education sector more widely and the cultural heritage community. The MLA and JISC are also funders of UKOLN. Within each sector UKOLN will be working with senior policy makers, highly technical developers, librarians, archivists and research students. This is a wide range of audiences and it can be hard to interpret their differing needs. UKOLN has conducted organisational audience surveys through internal reviews. In addition there has been audience stakeholder analysis to support the Digital Curation Centre. Disciplinary analysis has taken place around the Digital Curation Centre SCARP (http://www.dcc.ac.uk/scarp). SCARP addresses a disciplinary approach to preservation, 'immersing' experts in the preservation process, for example socio-medical research, imaging, architecture. These experts can provide insight into the preservation and curation needs of the disciplines. It is essential to consider both lifecycles and longevity. Is that part of the SCA programme?

UKOLN has carried out a quick piece of work for the MLA on the digital activity in museums in membership of the National Museum Directors Conference, plus C4 and the BBC. This is a high-level piece of work. **Note that MLA have requested that this work is not made public**. The intention is that it should inform the SCA's work. Ann Chapman led on the work which was completed in mid-January and is now in the hands of the MLA. It provides a snapshot, a helicopter view across the digital activity of the NMDC. Intensive audience analysis is not UKOLN's main thing.

UKOLN is doing a lot of work on repositories. It runs the JISC-facing repositories research team, doing both synthesis and analysis, and gives advice and guidance across the organisations associated with JISC. UKOLN is a partner in a support unit for institutional repositories led by the University of Nottingham. In addition to this, there is work on federated global repositories such as the e-Crystals Project (for the e-Crystals Federation, http://wiki.ecrystals.chem.soton.ac.uk). So UKOLN is working at three levels: across organisations within a sector, individual institutional repositories and global federated repositories. Other than digital preservation, the repository work is the main content area for UKOLN and some high-profile reports around repositories have already been produced. Liz Lyon wrote a report on Dealing with Data last year that includes both curation and

preservation issues. This report recommends that the SCA acts as a facilitator for a cross-sector strategy for curation and preservation. These repository and content-related reports have had global reach – a table from the Dealing with Data report is included in the recent Australian National Data Management Strategy.

There are common approaches around surfacing the content, for example using the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) (**www.openarchives.org**), applications profiles for aggregation and cross-searching of repository content. Intute is developing a cross search application across UK repositories (**http://eprints-uk.rdn.ac.uk**). The JISC perspective is to support cross-search and to increase visibility of UK content output. It is important to recognise that this is just as relevant to the cultural heritage sector. Liz Lyon has undertaken visits to most of the MLA regional agencies to discuss digital activities. These have raised the same issues of control and disclosure to the wider world. UKOLN is now setting up workshops in some of the regions.

*On collaborative work, the ePrints UK aggregator was a leading edge demonstrator project. It aggregates metadata about e-prints in repositories and has acted as the basis for the Intute cross-search*

On collaborative work, the ePrints UK aggregator was a leading edge demonstrator project. It aggregates metadata about e-prints in repositories and has acted as the basis for the Intute cross-search. In the eBank Project an aggregator service was developed by UKOLN. This project has now been extended in the e-Crystals Federation of repositories and will include data from the universities of Cambridge, Sydney and Indiana. There is also the Digital Repository Infrastructure for European Research (DRIVER) project (**www.driver-repository.eu**). This is an EU-funded repositories project: an aggregator for the whole of Europe presently covering text and e-print. Other aggregation approaches include RSS which is still highly used. UKOLN is looking at Atom (**http://atom.software.datapicks.com**) and ROUTE to deal with other sorts of content. It would be worth talking to Paul Wark or Brian Kelly if more information is required.

Cross-collection linking. eBank's (now e-Crystals') goal is to link from dataset to derived publication and back. This was innovative when done and is now being picked up by others. There remain big issues about effective bi-directional links. For example, what should be the unique identifiers for digital objects? Digital Object Identifiers are being used by the e-Crystals Federation.

Approaches to discovery – OAI-PMH is the main standard for exposing metadata recommended for use by UKOLN. Collection level descriptions plus tagging are also used, and the latter will create visibility in the blogosphere. UKOLN is working with Herbert van der Sompel on the OAI protocol for Object Exchange and Reuse (OAI-ORE) (to develop proposals for a specification for compound objects) which will be quite influential.

Social tagging – relevant projects include EnTag. What is the effectiveness of social tagging compared with hierarchies, taxonomies, vocabularies? The terminologies registry scoping study is also working on this. UKOLN is also involved in or leading work on the IE Service Registry and the IE Metadata Schema registry. All of these developments are designed to facilitate discovery. The Scholarly Works Application

Profile (SWAP) (www.jisc.ac.uk/whatwedo/programmes/programme_rep_pres/swap) is another project with UKOLN involvement. This will be adopted across the academic sector. e-Crystals has its own application profile for crystallography data.

### Discovery

UKOLN urges the creation of good communications strategies to raise awareness of content and services, but the main thing is to make resources visible in Google and Technorati to ensure people can find them. Google just announced that they now have NASA space data.

Usability testing must be mentioned. UKOLN has carried out some usability testing for MLA North East for their product. It is worth mentioning the Open Access agenda – Liz Lyon's current presentations talk about Open Science not Open Access or e-science so that material discovered could come from a blogging post-doc, a dataset on SWIV E L or a lecturer putting data on YouTube; the environment is becoming increasingly open. Facebook and the like take the supplier to where the user is.

UKOLN has a key role in future watching. Personalised services – this is now on the UKOLN agenda and it would be best to talk to BK or PK about the technical detail of UKOLN ideas. A range of different tools are being used to enable each user to find stuff on the web – blogs, Facebook and other social networking sites. They will have more detail of work in progress. Regarding Google Analytics and logs, Brian Kelly is the contact.

With regard to impact, UKOLN has been gathering more evidence recently and is building a database of reach and effect. The data table quoted in the new Australian data service strategy is an example of this. It is important for UKOLN to show the impact on organisations and outputs for end-users. Liz Lyon has just written a paper for the MLA CEO on UKOLN's impact on the cultural sector. This covers ten years with significant exemplars.

### Evaluation

Evaluation is measured by levels of adoption: if a demonstrator is developed has it been adopted and embedded in other people's work? How far has it become 'everyday'? One exemplar used is Stories from the Web (www.storiesfromtheweb.org). This grew out of UKOLN work on *Treasure Island* and is designed to increased literacy in young people. It engaged kids with books and authors and is a good example of e-content making a difference. For non-techies the downstream effects are critical. The SCA needs to show this over a period of time. Liz Lyon hopes to conduct the same kind of impact study at some stage for the education sector.

Crystal data stuff means you can now Google an I n C h I (International Chemical Identifier) to pull out a crystal structure – using a public engine to find specific resources. Also the Open Science approach is growing rapidly. Work has been done by the Digital Curation Centre to develop a lifecycle for curation and preservation of digital objects, with a series of stages (printed copy provided). The e-Content Alliance has produced content that lines up with this schematic and is currently out for consultation. It would be good to promote it more widely as a

visual vehicle to help people understand the lifecycle approach. The e-Content Alliance and the cultural heritage audit show people digitise without thinking of the lifecycle. The whole of the food chain must be covered in a simple model. It is important to get all the different elements connected together. Tools, standards, etc., all have to fit in.

# 7. Wellcome Trust

| Interviewees |
| --- |
| Robert Kiley, Head of e-Strategy |
| Wendy Fish, Head of User Services |

Those involved in e-content procurement seem to spend a lot of time worrying about licence terms. Firstly, The Wellcome Library is open to anyone interested so when talking to publishers it is hard to define who the licence covers. All Wellcome Library users are registered and most suppliers are comfortable with an arrangement where use is limited to registered users. Wellcome works individually with each supplier. Secondly, The Wellcome Trust has been leading Open Access policy development more broadly and it has been working with all the major publishers. This is illustrated by the development of UK PubMed Central. It was difficult to get the publishers to agree on a common policy, but once Elsevier was on board many of the others followed.

## Audiences

'Mandated' is an interesting word to be used in the questionnaire. The Trust communications team carried out a big exercise on audience needs analysis before the re-opening of the library. This took details from forms on the library membership database and now people are tracked when they come in. The list of people was divided into broad chunks, educational, cultural, academics, professional (picture researchers, writers) and commercial (publishers): there is overlap but it's still a useful categorisation. It also includes internal audiences. It doesn't cover the people who only visit electronically – this has been thought about it but not done yet. The library provides a raft of databases to people – some available to all registered users and other resources that the library subscribes to that are only available to staff. It depends on the licence agreement.

The design of Wellcome Images involved considerable audience engagement and last year there was a big exercise to rework it. Different actors and different audience groups were considered. There was a standard sort of web testing but specific to different audiences. Some expect the concept of the lightbox (for the professional picture researcher) while others just want a big search box. Don't provide log-ons for different categories, but want to meet the varied needs. Some digitisation surveys have been done – focus groups looking at what manuscripts should be digitised, for example. Collections were grouped together and a clear consensus emerged that the priority should be medical journals to provide a critical

mass of material rather than just highlights. One manuscript was digitised to test what could be done with treasures. This used the Turning the Pages system (http://library.wellcome.ac.uk/ttp.html) and provided significant commentary along with the original text. The results are there on the website to see. The medical journal backfiles project was a way of trying to establish what are priorities and expectations by using focus groups.

Of course, there are times when it helps the cause to be able to impress. The library digitised some material to catch the eye of key policy makers. UNCOVER is another project designed for particular audiences. People go and look at an exhibition and UNCOVER gives them a flavour of what the library has to offer. There is a small but rich amount of Turning the Pages material in the café and 1,000 images in UNCOVER on the first floor. Here there is narrative as well as basic catalogue detail. Then up on the second floor is the full library service: a hierarchy of access moving up the building.

There is a positive agenda to wider access. There are varying opinions on how, but a shared desire to make connections. The scope of medicine is broad and many people are unaware of what is available. The building hierarchy is designed to grab the people who are motivated to see the exhibitions, etc. The numbers of public using library services are increasing. There are also more adult independent learners. In the compulsory education sector there are 80,000 students doing GCSEs in medicine. The library has created a small amount of content for those students, but there certainly remain audiences that could be worked on more. Of course there are tensions. What is the primary audience for digital collections? This is discussed within the library. The USP of the library is the stuff in all its forms. The Crick Archive or rare books are unique and can only be in this place. There will only ever be a small audience. The task is to try to get to the really hardcore audience and then to spin off the products to others. The Wellcome film archive is being digitised and taken en masse the films may not be particularly engaging to the lay user. As with journals the whole film collection will be digitised. Wellcome is doing the lot, but will then pick out the gems. The clips are segmented into five-minute units and these could be made available to tell the story of medicine through time, for example: aim at particular audiences, but package for others. Things like this are also done for traditional resources. Lots is only relevant for academics, but the Trust also tries to support the non-specialist browser – give mediated access to the real content – as can happen when someone comes into the library.

*The task is to try to get to the really hardcore audience and then to spin off the products to others*

For the first time the library has a digitisation plan and funding. It is now gearing up to create a critical mass of content, but there is not yet a really effective delivery vehicle. Film clips will be embedded at various places in the site where relevant and the library is trying to expose metadata beyond the Wellcome catalogue. OAI is being used for the image collection so that most is available to everyone. There is a small subset of clinical images that must be limited. If a Google search is done for gout, Wellcome images should be surfaced. The catalogue records are in the OCLC database so Google can see them. Content is also put into PubMed Central and that is Google indexed.

### Discovery

Wellcome runs three subject gateways that form a part of Intute, but is enough being done to make Wellcome resources transparent in these gateways? It is mainly relying on keyword searching. In PubMed there is support for semantic web technology to extract what people really want and make it more precise. If the content is Open Access – free to read and repurpose – John Willbanks (http://creativecommons.org/about/people/#34) suggests that in five years 95% of all medical research will be read by computers. But most of it is currently behind authentication systems and when through that, there are frequently licence restrictions to prohibit reuse. The library has been pushing to have specific licences for Open Access to allow derivative works.

Personalisation is being considered at a very simple level: search refining and the like. Librarians do like the concept that search options will differ depending on whether the user is a member of the public or a serious researcher. This can be quite tricky. If choices have to be made in advance of the enquiry, will it limit the outcomes? People want things to be simple but creating multiple routes may reduce their discovery opportunities. Layering might make it simple also.

*There needs to be a degree of pragmatism. People go for digitisation projects because there is money*

Wellcome is not currently going as far as creating personal work spaces. It is trying the recommender concept of 'if you liked this then you may also find this useful'. Citations are obviously useful in this regard. There needs to be a degree of pragmatism. People go for digitisation projects because there is money. Pre-packaging allows you to tick the box for some audience or other. If the policy driver is revealing content to more people that may be a different priority. Libraries may not be the right place to do it. Pearson or the BBC might be better at it. Make stuff available and licence it to be used and developed by others.

### Evaluation

The library is aware of the CIBER work, but has not used the methodology. The library does get consultants to talk to users. Responses are just being worked on for the current survey work – may not be publicly available. It may be possible to give Chris Batt a copy, but most of it is not about electronic resources; rather it is about the environment of the library. In the past an annual satisfaction survey was undertaken. This current user survey is done using a different methodology. Users are asked: tell us the five things that you like about the library and five things you don't like. Also there are consultants conducting an impact survey. They have identified similar libraries elsewhere to use as comparators. This work includes electronic stuff. The report should be delivered at the end of April, but the Wellcome Trust might be able to provide a copy in confidence sooner. A benchmarking project with other specialist libraries has also been carried out. Looking at particular services – enquiries, visitors, requests, etc. – web log data is used to see where people are coming from; it shows there is high US usage. The Trust don't do much more than that since the package seems to change every five minutes and therefore it is hard to correlate the data. It gives a flavour of what is happening. It can be used to learn how the databases are being used. It is hard to measure such things accurately; hard to tell where people are going. Are there risks in the van de Sompel approach to mapping?

NCBI did a lot of work and PubMed is a big resource. There was a lot of analysis. Entries always have a lot of links to related articles. When these were relocated on the page the 'click through' traffic went up 40%. In search behaviours people's focus gets very narrow depending on mindset. Tunnel vision may set in for some while others may look around. This raises a number of design issues. PubMed does make it possible to follow links to find new material. It is now possible to limit choice and people can refine what they want.

# 5. Synthesis and Conclusions

The reader who has shared the experience of the interviews by reading these pages will almost certainly share the author's opinion that from the evidence of desk-based research and the rich interview record, it will be impossible to provide the very concrete deliverables that were stated at the beginning of the report. The seven sponsor organisations and those others interviewed are all committed to the value of making resources available on the web and are all exploring new approaches to delivery, especially using Web 2.0 solutions. Just as emphatically, those same organisations are nowhere as near convergence in audience analysis and evaluation as they are in the use of metadata standards and the need to build common service architectures.

*…but it is important for the overall delivery of the SCA mission that… decisions on 'what next?' are grounded in the reality of what it is possible and feasible to do in the next 18 months*

This may not do much for the deliverables, but it is important for the overall delivery of the SCA mission that these differences are understood by all involved and decisions on 'what next?' are grounded in the reality of what it is possible and feasible to do in the next 18 months.

At the same time it must be stated as strongly as possible that each of the interviews added useful intelligence to the shared knowledge of what is going on, both in relation to the SCA agenda and in the public sector more widely. While the organisations within the SCA are very diverse, ranging from a major broadcaster to an agency supporting quite specific academic computer-based research activities, and from a world library to the strategic body representing museums, libraries and archives of all shapes and sizes, the evidence provides a broad understanding on which to build.

To give some comfort about the value of the work that has been done, and the effort that contributors put into the interviews, it is possible to identify a number of factors and behaviours that should be noted:

- All of the sponsors and the other organisations are considering how to understand and work with their audiences in more productive ways
- Those organisations that are developing content are exploring how they may best use Web 2.0 techniques, personalisation and wider disclosure to improve the discovery of that content, subject in the last point to the protection of service to the core user base

- Organisations involved in licence negotiating recognise that there are inconsistencies in the existing situation where several bodies appear to be closing deals in areas where there is significant audience overlap
- There are good examples of how the creation to use supply chain is being used as a mechanism to refine and improve services. The reader will have spotted these, for example, in the Web of Knowledge service at MIMAS, the feedback channels used in NESC's Training Database and in the British Library's plans to use online questionnaires and other feedback tools to open dialogue with users
- Almost without exception, sponsors shared the view that current approaches to use evaluation based on quantity of activity leaves much to be desired. There were messages about organisations where analytical tools kept changing resulting in inconsistencies, and the telling point made by the British Library, that in a period when they had created significant quantities of new digital resources and increasing numbers of people moved to broadband it would be extremely surprising if use did not go up, suggests that there is a need for a discussion on how the SCA can move forward to more useful and easily implemented ways of analysing use
- There is a lot of work focused on repositories and while it must be recognised that there will not be a single solution for all public sector content, it will be crucial that, even in the work that is taking place now, there should be a collective approach to providing the means to share effectively where relevant, whether through the federation of services or the use of a service registry, for example. There does not seem to be a consistent approach to this even within the SCA sponsors at present
- The Deep Web Analysis techniques used at the CIBER team and the School of Library, Archive and Information Studies offer opportunities to take existing datasets and exploit them further. Several sponsors have already had experience of the approach and their views would be helpful to a discussion
- Perhaps the strongest message from the interviews is the extent to which JISC and the associated bodies that contributed (EDINA, MIMAS and UKOLN) have produced a body of research and knowledge that is at the same time a vital resource for the work of the SCA and all other organisations working with digital assets in the public sector, but so little known and understood by that community of e-content creators

There is another factor to mention that requires urgent action. The interviews showed clearly that the level of understanding of the mission and outcomes of the SCA and the level of commitment to the work programme varies significantly across the sponsoring organisations. That is due in some cases to staff changes and in others to urgent pressures within the organisations. Nevertheless, 'making a difference' to the use and value of public sector content of all types must require a common understanding at least of what the SCA is doing and what will be produced as a narrative to sell the concept of wider interoperation to those who do not live within the 'magic circle'. The point also requires that the sponsors agree to what input they are able to make to what is a very tangible and active programme of work.

*The SCA needs to use the information that has been gathered to agree some principles for collaboration and then a plan of action that everyone can commit to*

The timescale for Work Package One was short and the number of interviews increased from the original number – this was the right thing to do since the knowledge the interviews have provided must be a vital part of the SCA's immediate discussions. However, one consequence of that increased activity has been the need to reduce the integration of desk-based research to produce an overall summary of the 'state of the art'. Furthermore, the content of the interviews means that the deliverables originally stated are beyond reach at this stage. There was no consensus on audience characteristics or on possible scenarios for service evaluation, but that reflects the reality of where everyone appears to be now. The SCA needs to use the information that has been gathered to agree some principles for collaboration and then a plan of action that everyone can commit to.

The conclusion is therefore to propose a series of possible next steps, to build understanding and agreement on actions and to start a new momentum that has all of the sponsors behind it.

# 6. Next-Step Recommendations

*If those seven cannot change the world alone, they can make the world sit up and listen*

At the heart of the proposals is the question, 'what can the SCA achieve by the programme's end in 2009?' It is especially important both to ask the question and to answer it since the SCA is not like a regular JISC project where there is a management group and skills are bought in as required to complete the work packages. The difference with the SCA is defined by the fact that it is an alliance of organisations committed to increasing access to public sector e-content and the power that the SCA can wield derives from the close involvement of a number of large and influential organisations. If those seven cannot change the world alone, they can make the world sit up and listen. To my knowledge there is nothing quite like the SCA anywhere else. Yet, the branding will not be enough. The devil is in the doing and all sponsors need to be a part of that doing to show the difference that can be made.

What follows is neither earth shattering nor terribly ambitious in the long term, but these are steps that need to be taken and could be achieved by all without too much additional effort (in my opinion, at least). The recommendations are an agenda for discussion.

1. SCA sponsors should establish as quickly as possible what commitments they can make to the project objective. These might include:
2. Commitment to exploring the implications of the NISO SUSHI document as a tool for use by digital libraries and its relevance to other forms of collections
3. Providing a more comprehensive plan for the use and usability of analytical tools in the future including web analytics, focus groups and usability testing, detailing make and version for software or methodology for other techniques
4. Considering whether another topic for a demonstrator should be considered (some sponsors are already committed to the BBC Centuryshare project). At several interviews the Olympics was suggested as a possible topic
5. Investigating further the School of Library, Archive and Information Studies/ CIBER Deep Web Analysis methodology as a possible means of moving forward on an understanding by exploiting datasets that already exist. This approach might help to strengthen the argument that user evaluation can make a difference – if new approaches could be shown to increase use, for example

6. Looking more closely at the range of work that JISC is currently undertaking (described at least in part in the JISC section of this report) to ensure that maximum benefit can be gained
7. Considering the JISC usability tools that are now being built into project guidelines to see whether they could be tested within some of the sponsor organisations – a step towards a common approach
8. Exploring the extent to which the sponsors are prepared to share their development plans to identify new areas for collaboration
9. Investigating in more detail the current licence procurement practices to see, in practice, the extent to which greater value can be derived from coordination and/or cooperation. This approach could also be extended to authentication services
10. Finally, and most important of all in the long term, agreeing how a shared narrative can be developed to be used in advocacy both during and after this stage of the programme to lobby for coordinated development and to place the SCA as a significant change agent nationally

**Chris Batt**
27 March 2008

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| Building Public Value: Renewing the BBC for the Digital Age | BBC | | www.bbc.co.uk/foi/docs/bbc_constitution/bbc_royal_charter_and_agreement/Building_Public_Value.pdf |
| HLG/NLH Online Directory of Health Library Services | NLH | 2004 | www.library.nhs.uk/nlhdocs/spec.doc |
| Learning Platforms – How Can They Help You? | Becta | | http://publications.becta.org.uk/download.cfm?resID=35019 |
| Personalisation and Digital Technologies | FUTURELAB | | www.futurelab.org.uk/resources/documents/opening_education/Personalisation_report.pdf |
| Human/Computer Design Foundation Study | JISC | 2004 | www.jisc.ac.uk/uploaded_documents/JISC-HCIDesign-Study-Final.doc |
| Information Visualisation Foundation Study | JISC | 2004 | www.jisc.ac.uk/uploaded_documents/JISC-IV-Study-Final.doc |
| Personalisation in Presentation Study | JISC | 2004 | www.jisc.ac.uk/media/documents/programmes/presentation/jp_study_15.pdf |
| Sharing, Privacy and Trust in Our Networked World | OCLC | 2007 | www.oclc.org/reports/pdfs/sharing.pdf |
| Users and Innovation: Personalising Technologies | JISC | 2006 | www.jisc.ac.uk/whatwedo/programmes/programme_users_and_innovation |
| The Glass Wall: Homepage Redesign 2002 | BBC | 2002 | www.liamdelahunty.com/blog/media/theglasswall.pdf |
| Usability Study: JISC Services and Information Environment | JISC | 2004 | www.jisc.ac.uk/uploaded_documents/JISC-Usability-Studies-Final.doc |
| Developing Personalisation for the IE – Invitation to Tender | JISC | 2007 | ? |
| E-Book Observatory Project – ITT for Core Reading List | JISC | 2007 | www.jiscebooksproject.org/wp-content/core-reading-list-e-books-tender-final.pdf |
| E-Book Observatory – ITT for Deep Log Analysis Study | JISC | 2007 | www.jiscebooksproject.org/wp-content/deep-log-analysis-invitation-to-tender-final.pdf |
| Becta Vision for Learning Platforms | Becta | 2007 | http://events.becta.org.uk/display.cfm?resID=31050 |
| Technology for Change: Evidence and Practice | Becta | | http://publications.becta.org.uk/download.cfm?resID=35017 |
| Learning Platforms: How Can They Help You? | Becta | 2007 | http://publications.becta.org.uk/download.cfm?resID=35019 |
| Audience Analysis: USDA Web Presence Initiative | USDA | | www.usa.gov/webcontent/documents/USDA_Audience_Analysis.pdf |
| Evaluation of Digital Cultural Content: Initial Survey Results | Alice Grant | 2003 | www.culturalcontentforum.org/publications/audience/initial_audience.pdf |
| Evaluation of Digital Cultural Content: Analysis of Evaluation Material | Alice Grant | 2003 | www.culturalcontentforum.org/publications/audience/audience_analysis.pdf |
| Leap Into Lifelong Learning | Uni Adelaide | | www.adelaide.edu.au/clpd/resources/leap/leapinto/LifelongLearning.pdf |
| What EDINA Does: A Community report | JISC | 2007 | http://edina.ac.uk/about/annrep/communityreport_sept07.pdf **NOT FOUND |
| UK Online Centres: Myguide Pilot | UKOnline | | www.dfes.gov.uk/ciogroup/docs/myguide_pilot_research_summary.pdf |
| Lifelong Learning Networks | HEFCE | 2007 | www.hefce.ac.uk/pubs/cbrief/2007/69/cb69sup.pdf |
| Survey of Access to Electronic Resources for NI Health Staff | Queens Uni | 2006 | ? |
| NHS Staff User Survey | NHS | 2005 | ? |
| Researchers' Use of Academic Libraries and Their Services | RIN | 2007 | www.rin.ac.uk/files/libraries-report-2007.pdf |
| Understanding Research Behaviours | Uni Minnesota | 2007 | http://lib.umn.edu/about/scieval |
| Reconfiguring Government-Public Engagements | OII | 2007 | www.oii.ox.ac.uk/research/publications/FD9.pdf |
| Researchers and Discovery Services | RIN | 2006 | www.rin.ac.uk/files/Report - final.pdf |
| External Evaluation of Collaborative Collection Management Project | RIN | 2006 | www.rin.ac.uk/files/CCM report final.pdf |

# Resources Directory



# Audience Analysis and Modelling: Strategic Content Alliance, Work Package One, Final Report

This document is available in alternative formats. For more information: **www.jisc.ac.uk/contentalliance**

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