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# Shared Infrastructure Services Landscape Study

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A survey of the use of Web 2.0 tools and  
services in the UK HE sector

## Document details

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## Summary

This document is the final report on the JISC Shared Infrastructure Services landscape Study.

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# JISC Shared Infrastructure Services Landscape Study

## *A survey of the use of Web 2.0 tools and services in the UK HE sector*

### 1 Executive Summary

Whilst JISC has funded a range of tools and services for the UK higher and further education community, members of that community are also using Web 2.0 tools and services, many of which have been developed in the commercial global enterprise arena.

Currently there is limited knowledge of who is using Web 2.0 and for what purposes. Even less is known about why specific tools and services are chosen, especially in situations where JISC and institutionally-provided services are available. This survey has therefore focused on the current and active users of Web 2.0 tools and services in UK Higher Education institutions and identifying what they are using and why.

Active use of Web 2.0 appears to still be largely centred on early adopters. These people are willing to try out new tools and services as they hear about them, experiment with them and then use or drop them and they are often enthusiastic promoters of their chosen favourite service(s) to colleagues and peers – who themselves are now starting to use Web 2.0 tools and services in increasing numbers.

Although mainstream use of Web 2.0 services is growing and will continue to grow over time, no specific predictions can be made regarding the rate of take-up. An increasing proportion of new entrants to HE and FE are already familiar with and using Web 2.0 services but this does not apply to everyone and there is a need to support a range of very varied learner backgrounds and expectations. Similarly staff attitudes encompass the technophobe and the enthusiast along with the cautious but happy to learn middle ground. Web 2.0 digital literacy (and illiteracy) is still an issue that needs to be addressed.

Not all Web 2.0 tools and services are used to the same extent and some services (e.g. blogs, microblogging and tagging) are more popular than others. Within any one type of tool or service there are the market leaders, which are the most likely choice of new users: crucially such services have a large user base and a large amount of openly shared content. The primary factors governing initial choice of service are simple sign up, ease of use and good interface design, while the important factors favouring continuing use are good fit with the task, reliability and how much it is used by the individual's peer group – or in the case of institutional marketing and outreach, how much it is used by the target audience.

The survey revealed a continuing tension between users and institutional control (from IT support and central management) over what can and cannot be used. Whilst recognising that some information (e.g. personal financial information, student assessments) must be kept secure and due regard should be given to the possibility of damage to an institution's reputation, users felt that in many cases control is over-restrictive. However, there are now signs that some institutions are recognising the need for flexibility.

There is little demand for Web 2.0 alternatives where JISC and/or institutionally provided services fulfil needs adequately. JISC services such as email, identifiers and authentication are well-established and embedded within work practices and the Depot usefully fills a gap in institutional provision. Individuals will continue to use these services, although even here some users would like the option of using alternatives (e.g. OpenID for authentication).

Web 2.0 tools and services are used to achieve specific objectives. Social networking services are used to reach potential students and alumni, externally hosted blogs allow a less institutional presentation of resources, and text-sharing documents facilitate cross-institution and international collaboration. Using the cloud in this way is also appreciated by people who

are members of more than one institution, are anticipating career moves from one institution to another or have a professional role outside the employing institution.

There is less evidence for the use of Web 2.0 for sharing research data. It is unclear whether the findings of this study reflect that insufficient contact was made with that section of the community or whether there is simply less use. It is clear that there is a tension between the wish to share data to enable collaborative activity and follow-up work with the need to retain control over data, as with research student work and collaborations with the commercial sector.

More work is needed on exploring the value of virtual worlds as teaching and learning spaces. On the present limited evidence it appears that these can provide unique and positive learning experiences for some disciplines and some learner groups but more work is needed to identify the types of activity, learner groups and subject areas for which they are most appropriate.

As the UK academic sector moves from the early adopter phase to mainstream – if variable across institution, discipline and user type – activity, there is an opportunity for JISC to provide guidance and information to support individual and institutional users and to fund further research into some uses of Web 2.0 services.

The findings of the report<sup>1</sup> on the use of global enterprise Web 2.0 tools and services in Australia demonstrate a very similar situation to that in the UK (submitted as a separate document).

Priorities for JISC in the next few years should therefore focus on four key areas.

- (i) Enabling a wider range of people in UK HE to use Web 2.0 tools and services.
- (ii) Supporting UK HE use of Web 2.0 tools and services by providing best practice guidelines and by demonstrating existing innovative uses; also by requiring that JISC projects focus on giving a good user experience in service or tool (and user interface) design.
- (iii) Supporting institutions in moving to an acceptance of a 'mixed economy' of services and developing new institutional policies over their use and provision of appropriate user support.
- (iv) Funding work on specific aspects of Web 2.0 tools and services, such as (a) the JISC Developer Days, (b) development of tools and services that complement global enterprise service provision, (c) the teaching and learning activities that are most effective in virtual worlds, and (d) the use of Web 2.0 tools and services for research purposes.

## **1.1 Recommendations**

### **1.1.1 Support people new to using Web 2.0 tools and services**

R1: Fund a programme to address Web 2.0 (il)literacy among both staff and students through a number of delivery routes.

- Workshops delivered by contracted organisation(s) and/or by individual institutions using centrally developed materials
- A comprehensive set of online training materials (including Netskills Web 2.0 practice guides (in development) and possible additions to JISC InfoNet InfoKits<sup>2</sup> library)
- An easy to use evaluation checklist based on the 'What's good and what's not' section of this report

### **1.1.2 Support UK HE use of Web 2.0 tools and services**

R2: Create resource(s) demonstrating the potential of Web 2.0 services.

- Ideas Store to demonstrate the potential uses of various types of Web 2.0 services – using a wiki for this would encourage community participation
- Case studies illustrating successful innovative uses
- Guidance on best practice (perhaps through JISC InfoNet InfoKits)

R3: Require all user interfaces created by JISC-funded projects to adopt principles of design that focus on the ease of user experience, such as the following features.

- Simple sign-on procedures
- Tour of the service illustrating common tasks and procedures
- Able to be used easily by individuals at the low end of Web 2.0 literacy

#### 1.1.3 Support institutions in moving to acceptance of a 'mixed economy' of services

R4: Concentrate funding on developing services that complement global enterprise Web 2.0 service provision and fulfil an identified need for UK HE. Examples identified in this report are:

- Tools to facilitate import/export, conversion and formatting between wikis and other text sharing services
- A facility for easy linking between text sharing software and VoIP (e.g. GoogleDocs and Skype) to facilitate editing processes

R5: Provide support and advice to institutions considering outsourcing certain IT services through:

- Creation of appropriate JISC InfoNet InfoKits
- Provision of advice by JISC Legal services

R6: Provide 'disaster' planning advice for both institutions and individuals with regard to minimising data loss in event of externally hosted services ceasing operation.

#### 1.1.4 Fund work on specific aspects of Web 2.0 tools and services

R7: Continue to fund the JISC Developer events and promote outcomes

R8: Commission stud(ies) on the types of learning and teaching activity that are most effective in virtual worlds. Of particular interest would be:

- The user groups and disciplines for which virtual world activity is the most effective
- The tasks and activities for which virtual world activity works best
- Exemplars in the form of case studies

R9: Commission stud(ies) on Web 2.0 services and UK HE research needs, focusing in particular on:

- Are Web 2.0 services able to satisfactorily support UK HE research needs, bearing in mind specific issues such as confidential data, trust and commercial potential<sup>1</sup>
- What, if any, cloud computing type service could / should be provided by JISC to fill gaps

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<sup>1</sup> Scoping this study should take into account the findings of a RIN study currently in progress on the *Use and relevance of Web2.0 for researchers*, which is looking at the extent of adoption of different web 2.0 tools in different subject fields and disciplines, and the different types of researchers who are using them. A full report from this project is due out in December 2009. [http://www.ncss.ac.uk/research/hub\\_research/useandresearchofweb2/](http://www.ncss.ac.uk/research/hub_research/useandresearchofweb2/)

## **2 Introduction and Terms of Reference**

### **2.1 Background**

JISC-funded programmes in recent years have focused on both the need for and the value of shared infrastructure services and shared platforms for the UK HE sector. This funding has supported a range of pilot and demonstrator projects as well as setting up services.

Some services now form a valued part of the shared infrastructure services landscape. Services such as JISCmail and the UK federation authentication services are used and relied on nationally and there is a strong international demand for the Romeo service.

Others are still at varying stages of the development, service roll-out and user take-up continuum: examples are identifier services, metadata registries, JORUM, geoXwalk and Names (a pilot national name and factual authority service). While some services are slow to take off although still delivering a valued service, others – such as the SWORD application profile developed for repositories (and potentially other services too) – have more impact from the start.

In practice, actual use and views on whether a service meets a specific user need have been variable. Some services are valued and well-used while others have sometimes turned out to be, or are experienced by the user as, less user-friendly and/or not easily interoperable in the wider Web environment.

However, where once academic sector users relied on (or only had access to) JISC or institutionally provided tools and services, they now also turn to tools and services developed outside the sector by both commercial global enterprise and the open source community. Another growth area is the use of 'mashups' where a combination of services from the different development communities (commercial, institutional and open source) are used for a single application or to provide added value to data already held.

### **2.2 Finding the evidence**

Currently much of the evidence for such usage is anecdotal or hidden, recorded only by references within articles and reports on other topics. This study will provide a snapshot of what content services (ranging from generic Web resources to specialist scientific databases and datasets) are currently being used by HEI in the UK. The project timescale and the staff effort available precluded a comprehensive survey approach and interviews with large numbers of individuals. The approach therefore focused on desk-based research, with a limited number of case study interviews.

Given that academic collaborative work is often international, a comparison study was undertaken in Australia, with the aim of identifying any similarities and differences in the trends in the two areas.

## **3 Aims and Objectives**

The study aims are:

- To inform JISC of the current use of Web content services by the UK academic sector;
- To present this alongside a report on the current use of Web content services in one other region of the world;
- To inform stakeholders of the services with the most potential for supporting academic sector activities.

The objectives are:

- To identify the services which are most commonly used by the academic sector;
- To identify the uses made of these services;

- To provide examples of combination and re-use of services
- To identify the significant service features that influence the choice of service;
- To identify any significant variation in take-up in another region of the world;
- To provide a set of recommendations

## 4 Methodology

Since the study was a short-term project, the time available to collect the evidence was limited. It was therefore decided to focus on desk-based research methods that could be carried out in the time available: a literature search, a blog to collect information, a set of case studies, and a review of academic institution Web sites.

A key factor was getting enough awareness of the study within the sector to enable sufficient evidence to be collected that would allow conclusions to be drawn and recommendations made. The blog was linked from the UKOLN Web site home page, which also featured a short news piece on the study. Colleagues at UKOLN were asked to promote the study via (a) their own blogs if appropriate, (b) tweets on twitter and (c) email messages to individuals. A message posted to the lis-link discussion list prompted a number of contributions to the blog. Further messages to a range of other JISCmail discussion lists (e.g. art-all, biology-teaching) had very little effect. Requests to a selection of approximately a dozen list-owners to post the message to their list were ignored by all but three of those contacted.

### 4.1 Related work identified (literature review)

Searches for related work were undertaken. Although a number of very useful related reports were identified (see Reference list, plus comments below), none had precisely the same scope as the current study.

At the same time as providing background and context for the work being undertaken, scanning of relevant reports and work in progress brought important issues to the fore and provided useful pointers (even though these gave sometimes conflicting viewpoints). An additional benefit was that several suitable candidates for case studies were identified. A list of key resources was made available on the blog, allowing the opportunity for further suggestions. As a result of communications about the blog, several people contributed information about related work, including one internal report.

Most projects identified have focused on researcher use of Web 2.0 resources, or on use in learning and teaching. This study has a wider remit, covering all HE staff.

One particularly significant project which is currently in progress is the *Use and relevance of Web 2.0 resources for researchers*<sup>3</sup>. The project was commissioned by the Research Information Network to 'look at the extent of adoption of different web 2.0 tools in different subject fields and disciplines, and the different types of researchers who are using them'. It will also 'enquire into the factors that influence researchers to adopt and use Web 2.0 tools, and conversely the factors that prevent, constrain or discourage usage'. Implications for the future of scholarly communications will be explored. In addition to a quantitative survey (conducted over summer 2009), the study also includes interviews with users and non-users, and case studies of selected Web 2.0 tools (a mixture of public and private sector services). The project is due to report in December 2009 and is likely to be useful for JISC, as complementary to the current study.

Another relevant project this time focusing on learners was *Higher Education in a Web 2.0 World*<sup>4</sup>, which was conducted by the Committee of Inquiry into the Changing Learner Experience. The Inquiry was concerned with the experience and expectation of young learners in particular. The final report found 'that universities and colleges are generally falling behind their students in the use of these technologies and challenges them, and the major educational agencies, to take account of, and capitalise on, these trends'.

As part of the overall report, the Inquiry commissioned a more focused study of Web 2.0 use, resulting in *A Review of Current and Developing International Practice in the Use of Social*

*Networking (Web 2.0) in Higher Education*. It covers Australia, the Netherlands, South Africa, the UK and US. Section 4 of the main report (Web 2.0 use in HE now) is based on this study which reveals that 'Web 2.0 technologies are being deployed across a broad spectrum of university activities and in similar ways in the UK and overseas'. The findings of the current report below certainly chime with the statements that: 'Deployment is in no way systematic and the drive is principally bottom up, coming from the professional interest and enthusiasm of individual members of staff' and secondly: 'Advice and guidance is available [from JISC services etc] but there is no blueprint for implementation of Web 2.0 technologies, and each institution is currently deciding its own path'.

A JISC-funded study in 2008 collected information about the way social software is being used in teaching and recorded experiences of staff and students: *A Study on the Effective Use of social software by further and higher education in the UK to support student learning and engagement*<sup>5</sup>. The report is aimed at both policy makers and teaching staff in further and higher education who are considering the use of social software as an aid to teaching or as a means of encouraging, motivating or helping to retain students. The study found that no institutions had formal policies on how social software tools should be used. Educators need to support the diverse needs of students – both those who expect a participatory approach, and those who may be unfamiliar with the social networking phenomenon and prefer a 'broadcast' teaching approach.

The APT STAIRS<sup>6</sup> project tested new collaborative technologies to enhance teaching and learning across the six partners in the Bloomsbury Colleges consortium. As well as students, teachers and researchers, it also included administrators. The project focused on the use of Google Docs to create a common space where users with different skills could work online together. The project ended in April 2009 although the work has been taken forward into several continuation projects.

Another JISC project investigated developments in Web 2.0 services in libraries: *Towards Implementation of Library 2.0 and the e-Framework (TILE)*<sup>7</sup>. The TILE 05 survey contains lists of Web 2.0 services being offered by libraries in August 2008.

The Eduserv Foundation funded a series of rolling reports from July 2007 to June 2009 looking at the takeup of Second Life within the UK higher and further education sectors<sup>8</sup>. The work is being continued through Virtual World Watch. 'A core of universities, most significantly the Open University, Edinburgh and Coventry, have many groups, courses and departments using virtual worlds as a central technology for teaching and learning activities... Other universities, such as Lancaster, Teesside, Southampton Solent, Glasgow Caledonian and Strathclyde, are also developing a significant virtual world presence.'

In contrast to findings reported in *Higher Education in a Web 2.0 World*, a study of a small group of University of Northampton students found that they were not as fully involved in the online communication revolution as the hype would suggest<sup>9</sup>. Just over half had a MySpace or Facebook account, most had heard of blogs but never read them and although many use wikipedia only 7.9% had ever written or edited a wiki. There was 'a severe lack of interest and awareness of online games, podcasts and virtual worlds'<sup>10</sup>.

A large cross-institutional study of first year university students in Australia (albeit from 2007) also supports the above view. Results indicate that 'there is greater diversity in frequency of use of technology than many commentators have suggested'<sup>11</sup>. While there was a sizeable minority who were very frequent users of Web 2.0 tools, more than 80% of students surveyed had never contributed to a wiki and more than 50% had never used a social networking site or read a blog.

## 4.2 Blog

It was decided to set up a blog to fulfil the following requirements.

- To provide a Web presence for the study for its duration and the 3 years following, as required for JISC-funded projects.
- To collect information on the use of Web 2.0 tools and services (developed in the global enterprise community) by the UK academic sector.

- To make that information publicly available.

Blog posts provided news about the study and its progress, while individual pages focusing on the use of Web 2.0 for specific tasks offered people a way to contribute their comments. Further pages were created for the individual case studies. As the intention was to share the information gathered as widely as possible, the blog was given a Creative Commons Attribution-Noncommercial-ShareAlike 2.0 UK: England & Wales License.

#### 4.2.1 Community Participation

A major challenge was to get the blog – and the request to add comments on specific topics – sufficiently well advertised. Initial postings on library-focused email lists produced some feedback very quickly and further posts prompted more comments. Occasional comments thereafter from this community indicated that the request was also being spread by people who had already responded.

Postings to email lists for other communities were less successful, and it is not possible to attribute any specific participation via those lists. Evaluating which lists to contact revealed some dormant lists, prompting the thought that it might be useful to have a status (e.g. active, dormant, closed) visible in the JISCmail A-Z list.

Personal approaches were more successful in getting participation. These were made to people who were (a) recommended by UKOLN staff, so mostly in the library and information science community, (b) recommended by case study subjects, (c) originally approached as a case study subject and (d) identified through the review of academic institutional Web sites.

#### 4.2.2 Evidence Collected

The number of comments contributed for each task page varied from a single comment up to twenty-nine comments. Most tasks had at least a couple of comments, while just a few had more than twenty comments.

Most contributors added three or four comments, though a few people added comments to most of the task pages. Most comments were short, although a few were either very brief or quite extensive.

It was noticeable that the posting of comments tailed off dramatically once the study team were no longer actively promoting the blog and the study. The last comments were submitted on 13<sup>th</sup> August 2009. This coincides with the final efforts made directly to publicise the survey and to request comments.

### 4.3 Case studies

For the case studies the task was to identify individuals who were using a number of Web 2.0 tools and services as representatives of a range of roles. This was done by (a) asking UKOLN colleagues for suggestions, (b) approaching individuals who contributed Comments on the study blog, (c) approaching individuals referenced in documents found in the literature search, (d) approaching individuals identified as a result of the review of UK academic institution Web sites and (e) requests on email discussion lists asking for volunteers.

Case study subjects were sent a short list of questions about their use of Web 2.0, which tools and services worked for them and which didn't, why they were using them, what they were planning to try, and which factors influenced their decisions. In some cases the case study text was completed by collaborative writing by emails and Word document drafts. In other cases, the set of questions was used as part of a telephone interview, which was later written up. In both cases, further questions were added as the text was written. Case studies were only published once subjects had approved the final text.

Because subjects had to be identified and it was not known how long that identification process would take, the number of case studies was not specified in the proposal. The creation of an initial list of potential subjects led us to set a target of twenty case studies; this target was reached in September 2009 with twenty-two case studies published.

## 4.4 Web site review

The Web sites of academic institutions in the UK HE sector were visited. Each site was examined for evidence of the use of Web 2.0 tools and services. This was an interesting exercise in itself, since individual Web sites vary greatly in how easy they are to navigate around, and how they present information.

The areas of the site identified as being the most likely to be using Web 2.0 tools and services were searched first; these were those focused on (a) prospective students, 'study here' or student life, (b) accommodation, (c) news, (d) alumni and (e) the library. The second stage was to make site searches using specific terms such as 'blogs' and 'podcasts'.

## 5 Findings

The following sections summarise the key points of interest from the blog and the case studies, together with some observations from the survey of UK HE institutional Web sites. On a general note, just three institutions currently have a social media page, although more actually have a presence on various social networking and shared media content sites. It appears that up until now using Web 2.0 services has been very piecemeal, and typically an initiative taken by an individual or department. However, a few institutions are starting to look at this in a more structured way, with the lead usually being taken by the marketing and/or PR department.

The by-task structure proved to be a useful way of collecting input, although inevitably there is some overlap between the tasks as classified and/or the software used. For example, wikis are mentioned under 1.1 Sharing Text Content and 1.6 Sharing Admin Content as well as 3.1 Messages and Discussions.

Perhaps because most Web 2.0 tools are easy to use (often there is no real learning curve) people seem to be happy to use a range of software, and/or change to new and better tools when they become available. It was also noted that participation in a range of communities and activities was likely to necessitate using different tools and services. As a corollary to this people have often included long lists of software that they have experimented with, but admit that they are not active users of most of these.

Advantages to using Web 2.0 services are that they typically require no (or minimal) direct financial investment. Sign-up procedures are usually simple and only a small investment of time is required for learning to use a service or to set-up an individual product such as a blog.

Disadvantages noted were the problems that arise if data needs to be moved when switching from one service to another (a significant issue in some cases), or if a service closes with loss of data.

### 5.1 Sharing Text Content

*We asked:*

*"Institutional repositories provide a place to share documents, but are they appropriate if you want to share working or draft documents with colleagues at other institutions, either in the UK or overseas? Institutional wikis or dedicated storage areas on a server may not be the answer if you need to share documents with fellow members of a committee spread over the UK. A project or institutional Web site is one place to publicly share information in text form, but increasingly entries are added to Wikipedia too. Web-based text storage and wiki solutions include GoogleDocs, PBWorks (was PBWiki), Wetpaint and Huddle."*

This was one of the most populated areas of the blog, indicating that tools for sharing text content are among the most commonly used Web 2.0 tools. These services are used where documents need to be shared and edited, including co-authoring of articles and reports, working

committees and consortium funding bids. People value the free facilities for shared working, dissemination and storage.

Where simple sharing of documents is all that is required, GoogleDocs is the most commonly used service. People find it easy to use (so a good choice for groups that need to be up and running quickly and which often include new users) and it is also secure and relatively stable. In one case frustration was expressed that GoogleDocs is 'frowned upon' by the respondent's institution (which favours MS SharePoint). Elsewhere firewalls also caused problems when using GoogleDocs with colleagues in the NHS, prompting a switch to PBWiki. Although this was a technical success, the GoogleDocs software was still preferred.

If the need is for a collaborative co-authoring environment with more facilities, wikis may be preferred. They are highly suitable for the iterative process of writing training materials and developing staff manuals; a benefit is that they can be shared with people who may not have access to institutional network drives e.g. temporary staff. They are also being used for collaborative exam revision where students create and deposit answers to past exam papers; these are moderated by teaching staff who provide guidance for improving answers and address conflicting answers/views etc. At another university librarians are using a wiki as a space to explore and share experiences of web 2.0 applications. This has resulted in increased implementation: *'It is mainly thanks to this wiki that I have created a library blog, a facebook account, a twitter account, delicious, librarything, netvibes and very recently videocasts.'*

However often the issues that need to be addressed when co-authoring documents are not connected with the software, but instead logistical/management issues which can be 'quite challenging'. One respondent recommends that if more than two people are working on a joint document together, one should be nominated to make changes; this avoids the possibility of writing over each other and losing text. Also, talking before important editing is often essential, so linking of editing facilities with a VoIP or telephone connection would be invaluable. Another contribution supports the usefulness of linking in voice: *'I have Google Talk on my wiki page and can use it to chat to visitors to my wiki if I am online'*.

Common problems reported across wikis included copying and pasting, importing and exporting data, and formatting. Changing from one wiki to another is a major process. Loss of formatting between GoogleDocs and MS Word documents is also an issue. *'One of the disadvantages to using PBWorks is that the easy archive function doesn't store any documents added.'*

Where an institution hosts, maintains and supports a wiki, allowing single sign on, especially where external users can also have access, there is no incentive to use external services. Institutional wikis are compliant with UK data and privacy laws (not always the case with non-EU hosted services); also some key features offered by internally hosted systems are not part of the free offerings.

Of the external services, PBWorks is a popular choice though other software is used: Huddle (although this was considered 'slightly messy to use' by one respondent), MediaWiki, Confluence, Wetpaint, Wikispaces, Scribd, Box, Wikidot and Cl1p.net were all mentioned.

#### *Conclusion*

*Web 2.0 services for creating and sharing text are widely used and highly valued. Use of external Web 2.0 tools may be determined by whether the institution hosts a wiki and/or whether it is accessible to external collaborators. A significant issue is the lack of facilities in wikis for import/export formatting.*

## **5.2 Sharing Presentation Content**

*We said:*

*"As a lecturer, you might be using an institutional VLE, although this will limit access to members of an institution, or perhaps depositing material in JORUM, which will provide wider access within the HE sector. To make material accessible to an even wider potential*

*audience, or store it in one place when moving from one institution to another, there are presentation content sharing services such as Slideshare, Authorstream and Slideboom.”*

Slideshare is the most commonly used service for sharing presentation content – reasons cited are that it's mainstream, easy to use (although one user finds the interface lacking), has a good sized user base, has the option to allow or limit download of presentation files, and is open to the broader international community. In some cases institutional servers don't have space for sharing presentations and access is restricted. One librarian using Slideshare for presentations given to students said *'I didn't use JISC or institutional service as I am not aware that one is available'*.

The only other software mentioned was Slideboom and Authorstream - just one user each and in both cases these were of secondary use to Slideshare. The reason was explained as: *'although Slideboom appears to have richer functionality, Slideshare has the larger community'*. A commercial service, SlideCast, was also mentioned.

Many people also tend to embed slides in their existing blogs and wikis. For events, Slideshare might be used before the event, and afterwards, slides embedded in a wiki.

As a result of specific licensing agreements applying to the content of some presentations, they cannot always be shared and/or would require editing in order to be shared.

It was highlighted that JORUM covers learning and teaching presentation materials but it is not an appropriate space for other types of presentations and the question was raised of having different services to support licensed content versus open to all.

#### *Conclusion*

*Lack of institutional and JISC services for sharing presentation content is a primary driver for individuals to use external Web 2.0 services. Other reasons are the ability to reach a wider – especially international – audience and to keep materials in one place following – or in anticipation of – moves from one institution to another.*

### **5.3 Sharing Image Content**

*We asked:*

*“Do images form part of your data set or do you want to use images to get feedback on some aspect of your project? Perhaps you are looking for a marketing or promotional route to get institution, department or project images seen by a different audience. Image content services include Flickr, PhotoBucket and Snapfish.”*

Unsurprisingly, Flickr is the most commonly used service. One person commented: *'While the interface is messy, it is relatively simple to use'* while another noted: *'Personally I find the metadata potential, API based tools and management options in Flickr really useful (particularly for managing conference or event images)'*.

People find the ability to link to Flickr images from their blog or wiki extremely useful. Sometimes this is just in order to add visual interest to textual pages (eg photos of events). However the images may be key resources, particularly in certain subject areas such as art and design.

Several people use Flickr to access creative commons images in presentations, and also find it a good resource for teaching.

An archivist is using Flickr to share digitised versions of her archive's image collection, which has a reasonably permissive Creative Commons licence. The physical archive is only open one day a week, so this is an ideal way to open up access and use of the collection. (Twitter and a blog are used to share news and updates about new items.)

Instead of using a service such as Flickr, some people just upload images directly into blogs and web sites. However one advantage of using Flickr is that because it has such a huge web presence, resources automatically come up high in search engine results, which would not easily be achieved with a home-grown service.

Some organisations also share images internally through the intranet and shared network drives.

Just four UK HE institutions have a corporate presence on Flickr; however it is likely that there are other unofficial groups which are related to specific institutions. One interesting use is a library using Flickr to host its guided photo tour with a text commentary.

TwitPic is also mentioned, a companion site for Twitter, although it could be used independently of Twitter in a way similar to Flickr. One person uses Picasa and also Facebook for photo sharing.

For a student photographic publication, Issuu was used as 'a very nice alternative to paper publishing'.

Selection of software may be based around communities of interest:

*'Facebook seems to work for those that want to share a small number of images quickly and socially, Picasa seems to work for those who want easy synchronisation with their machine, Flickr is often more valued by those who have built up contacts on the site.'*

#### Conclusion

*Use of image content Web 2.0 services is popular with individuals and institutional use for marketing purposes seems to be increasing. In both cases, the services used are valued for their access to particular audiences outside the institution.*

## 5.4 Sharing Video Content

*We asked:*

*"Are you a speaker at a conference, seminar or workshop? If circumstances mean you can't attend, have you thought about recording your talk and making it available through JORUM or a Web 2.0 service like YouTube, blip.tv, yahoo.video or PhotoBucket? If your presentation slides are also available but using another service, how are you linking the two resources?"*

Five out of eight respondents are using YouTube at their institution to make videos, vodcasts and screencasts available. Subject areas where teaching staff and students are finding it useful are unsurprisingly art/design/film, but also sports science. Several institutions have their own YouTube Channel. Depending on whether their institution acquires a presence on iTunes U, one respondent is also looking at the possibility of including the same content there. Links are sometimes made from blogs.

One respondent has used YouTube for a number of years to archive and share videos produced as part of broader professional activity, not directly related to his day job, so an institutional location would not be appropriate (or desirable for IPR). He believes that using YouTube has enabled him to create a strong personal professional brand, which would have been diminished in a more 'corporate' style of archive such as an institutional repository.

As already noted, Web 2.0 services are usually introduced by motivated individuals. However currently eight UK HE institutions have a corporate presence on YouTube. Predominantly this focuses on giving potential students an idea of student life, although one institution is using it for news items.

Facebook is also being used, but otherwise videos are often just made available on institutional web pages. There is one mention of inclusion in a blog. Vimeo and Viddler are the only other video sharing services recorded as being used, although one person is aware that there is a wider variety of video sharing tools in use by colleagues for personal use.

Xtranormal is noted as an innovative complementary service – it creates animated movie sequences from text - *'this might have some potential for alternatives to straight text instructions'*.

#### *Conclusion*

*The present low level of use of external Web 2.0 video sharing services is starting to grow as new uses are identified. The main uses are for teaching resources and marketing the institution.*

## **5.5 Sharing Research Data Content**

*We asked:*

*"Are you working on a project where there is a need to share data? Does your work involve storing an extremely large volume of data? How easily can your institution accommodate this? Are you using Grid technology and cloud computing? And how do you link between datasets and, for example, articles or research reports that may be based on that data?"*

Little feedback was obtained on this task. The single comment came from a JISC funded service and cited only JISC services. These were either services they were hosting (ShareGeo), using within a project (DISC UK Datashare), using for storage (repository services) or were aware of (MyExperiment). It was felt that at present these met their current needs.

The researchers are aware that the cloud is being used for research data and feel that the lack of response is not indicative of lack of activity. It is clear that there will be issues around researcher confidence and trust when using cloud computing but it is likely that Web 2.0 usage will grow, albeit at different (and in some cases slow) rates in the various disciplines.

#### *Conclusion*

*Although there is a movement to make data more transparent and available to other researchers, currently the majority of the research community prefer the traditional set-up. Concerns over confidential data, competing research teams and commercial interests mean that this area will likely be slow to develop.*

## **5.6 Sharing Admin Data Content**

*We said:*

*"Sometimes administrative data needs to be shared. People from different institutions might be involved in putting on an event so you need to share in spreadsheet format – delegate lists, budgets, catering requirements – or you might be project managing a project with partners from multiple institutions. If you're doing this sort of work, you might be using GoogleDoc Spreadsheets, for example."*

The limited feedback on this task may simply reflect that for many people, email and institutional services and tools (intranets and institutional wikis, virtual learning environments and content management systems) are sufficient for their needs. The need to share administrative data using other tools is more likely to become an issue where cross-institutional collaboration is required and for events management.

For events management wikis offer a space to store delegate information and resources (e.g. presentations) and to provide a discussion area before and/or after the events. Wikis can be supplemented by other Web 2.0 services such as EventBright (for registering interest) and Twitter (hashtags to help with feedback); CoverItLive offers live blogging plus additional features such as tracking and streaming Twitter hashtags.

Closed wikis are being used for project management and organising personal workloads, while external services are sometimes used for meeting arrangements (Google calendar, Doodle). Where individuals work part-time at more than one institution or have both academic and freelance workloads, there can be advantages to using the cloud with information accessible via mobile phone applications as well as different computers and laptops.

There is some experimentation with Web-based teleconferencing and video-conferencing services as alternatives to face-to-face meetings. Respondents mentioned using Skype and Webex (a phone and computer based facility offering multiple caller dial in and log in to a webconference) alongside viewing Powerpoint presentations. Shared calendar services are used for organising dates and times of meetings, especially where these involve people from different institutions and countries. One example quoted is Mosuki, which allows the details of events to be restricted to as many or as few people as wished, enabling both work and personal engagements to be recorded and shared via a single tool.

For these services to work not only must they successfully address the task required but all group members must be able and willing to use them. One project's use of Twitter as a "brief update" method proved unsuccessful as too few people were comfortable with using the service.

#### *Conclusion*

*External services are used where institutional resources (e.g. wikis) cannot be accessed by non-members; addressing this issue would lessen the need to use these services. However, there will be a continuing wish or need by some individuals to use non-institutional services on occasion. A major concern is the preservation of content should externally hosted services cease operation and what measures should be taken to minimise data loss.*

## **5.7 Sharing Geographic Content**

*We asked:*

*"Do you need digital maps for 'how to get here' information, want to demonstrate the range of countries your student body comes from or does your work have some sort of geographic element? The JISC-funded geoXwalk, a geo-spatial gazetteer project, is still in development. Have you tried using GoogleMaps or GoogleEarth? Or maybe WikiMapia (which combines GoogleMaps with a wiki system; users can add links to other resource, upload images and embed YouTube videos) ... or something else?"*

This was another task with only limited feedback but interestingly two distinct activities were identified by respondents.

The first is access to maps to provide potential visitors and event participants with sufficient information to get to a venue. Google Maps are embedded in a number of academic institution Web sites, typically appearing on 'how to get here' and accommodation department pages. They are also frequently used for events Web sites, either linked from a Web page or embedded in a wiki. The maps may be supplemented by widget to feed in local weather and traffic updates and a link to train time / updates of delays. GoogleMaps are also used to show the location of specific buildings, e.g. libraries forming part of a co-operative service. GoogleMaps was felt to have overtaken StreetMap and MultiMap due to ease of access and functionality, a well-documented API and reliability. One respondent used several services (location tracker, RSS feeds and other tools) to publish details of his travels, along with maps and images, on his blog.

The other use of geographic data is for geo-datasets and services; here the tools used range from the Common GIS interface and the JISC ShareGeo and GoGeo! services to commercial mapping tools such as Geoclip and DBx Geomatics. Mention was also made of the Exhibit framework for GoogleMaps and the recently announced Google Tables as tools to keep an eye on.

#### Conclusion

*The use of externally provided services to provide geo-location information for venues and events is now routine and easy to do. In contrast the integration of geographic data in datasets and services with another focus currently seems to require more specialist skills and can be restricted by licensing terms.*

## 5.8 Referencing and Linking

*We said:*

*“Social bookmarking services are ways of providing links to resources that have a common factor. A project page can hold links to presentations, text and images held in different services, or with other Web sites. It also provides a way to bookmark clusters of resources on a topic of interest to you. There are a whole range of services around - Delicious, Furl, Sumpy, Citeulike, Connotea, Stumbleupon, Digg, reddit, Newsvine, etc.”*

Social bookmarking services are much used. Library and lecturing staff use these services as a more flexible way to create topic link-lists on Web pages or blogs than by hard coding them in html, they are used to bookmark Web sites relevant for workshops, seminars and conferences and as a staff training tool and to share information on relevant resources with colleagues, successors (e.g. maternity cover) and project partners. They enable people to access their bookmarks wherever they happen to be – especially useful if working in multiple locations and using more than one PC. The fact that these services typically span multiple types of content and context – web pages, blog posts, RSS feeds, content sharing services for images, slides and video, etc. – is particularly valued.

Increasingly buttons to use social bookmarking services are found on Web sites, indicating that content providers are recognising that people will be using these services. Copac already does this and recently JISCMAIL introduced it as a feature.

Delicious is a popular choice, reported as being free, quick to set-up and simple to use and maintain. When using several different PCs, it was noted that a plus factor is *‘the ease with which it synchs information across all computers through the Web interface and, where it’s convenient, the browser plug-ins’*. Other features influencing the choice of this service were that multiple accounts can be set up by one person, several members of staff could use the same login so sharing the task of adding new links, and multiple staff and students can add links in a collaborative resource. However, one respondent thought the service could be improved with a good rating and recommendation functionality.

For managing one’s own work, the service of choice is a matter of personal preference and Diigo, Citeulike, EverNote and Digg each have their fans. Other services such as Connotea, Zotero and Mendeley seem to be used for more specific tasks than just general bookmarking; for example, one respondent noted that Google Notebook was used to *‘build up a databank of useful web pages’*. Other comments mentioned that some services had features not available in Delicious, e.g. Digg’s student notes and text highlighting options.

Lecturers have required students to use social bookmarking tools (e.g. Delicious, Bibsonomy and Citeulike) in assignments as a way to (critically) record their reading. At one institution, students on an information literacy course were required to create a playlist (a references list) using H2O – a tool developed at Harvard University for the creation of shared lists *‘of readings and other content about a topic of intellectual interest’*.

There is a move now to build services with their own bookmarking functions. Examples are Digimaps "Map Chest", Education Image Gallery's "Lightbox" and SUNCAT's option to mark and save or email records. With regard to library catalogues, Talis Aspire will potentially behave in a similar way to social bookmarking tools to create online reading lists.

Some potential uses for social bookmarking were suggested, although respondents did not think it was possible to do this in currently available services, and raised the issue of quality control. Suggested uses were building a bibliography that users of (my) service/project can help to update and providing a way that others can easily suggest tools and pages that (my) service/project ought to review for suitability. Another respondent noted that they would like Delicious to be a more editable and connectable space, saying:

*What I would ideally like [in Delicious] are a few more fields (maybe job title, location (if only very high level e.g. country), small profile image, etc.) but, more usefully, the ability to have different views onto my account and/or cluster certain tags to appear on my profile page and to explain tags. If I could do this my default view would show my professional profile (and either include professional contact details or link back to my LinkedIn account or similar), this profile would include my professional tag clusters and I would also add a description to certain tags (if this were made possible) to make this more of a browsable reference space. For example I would want to label my socmedrole tag as being "Interesting sites and materials for my role as Social Media Officer for EDINA". Or the label "eVentures" as "Links related to my talk to the ELISA Open Forum in June 2009". In both of these situations I think I would want to be able to link to the appropriate website for that set of material (so the description of the first tag would link to the EDINA website, the latter to the ELISA event page).*

### Conclusions

*As these services are now being widely used for project, information resource and course-based purpose there is a need for guidance on good practice to enable the most effective use.*

## 5.9 Library Catalogues, Bibliographies and References

*We said:*

*"Producing quality catalogue records takes time, but funds are limited. For complete catalogues, people often buy in records but when it's a smaller task - recording a personal collection, creating a reading list, building up a bibliography or set of references, or a new way of advertising recent additions to stock - there are services such as LibraryThing and Delicious tagging."*

There were only a small number of responses on this task, which may in part reflect difficulties in adding or embedding Web 2.0 type features within existing catalogues. New systems will become available in time, but cost will largely determine take-up rates and the use of open source library catalogue software has not really taken off in the UK in the way that it has in the USA. However, libraries are experimenting.

LibraryThing is used to create 'mini-catalogues' for specific purposes that cannot be achieved in the library OPAC; examples are (a) recent accessions using tagging and RSS feed options, which cannot be done in the OPAC, (b) listing the textbooks for courses in a specific department and (c) a showcase selection of the contents of a collection. LibraryThing and iLike are also used by individuals to create personal catalogues for projects, though these services only cover general monographic material and not serials and/or scholarly objects.

One collection that relies entirely on volunteer effort has installed Koha, an Open Source Integrated Library System, and is gradually cataloguing the collection. Another library has created a list of items in a large, uncatalogued microform collection using the Web version of WorldCat, noting that this was much quicker and cheaper than buying MARC records.

There is a small amount of experimentation on the use of QR codes. In one case the codes are automatically generated for catalogue records of material available on library shelves; when scanned by a mobile phone with a QR reader, the record and class number of the item is displayed, assisting users to locate material in a large collection. In the other case, QR codes for e-journals are displayed on the end shelf of physical journal runs, thus alerting users to further resources.

Libraries are also experimenting with tagging. In one institution, a trial 'beta catalogue' included LibraryThing tags plus My Discoveries for users to tags, review, create lists and rate library materials. Another library noted that their new library management system has many Web 2.0 type features and that they are involved with beta testing a further development, which will potentially behave in a similar way to social bookmarking tools to create online reading lists. It was reported that Copac has decided to create its own tagging service to enable users to create an online bibliography that will be retained for as long as required, with access to the list restricted using login data. All Copac records have a button to save/share the record in Delicious; this feature might be expanded to other social bookmarking sites in the future.

One respondent speculated that Google Custom Search engines (which allow you to personalise your searches on specific online resources and then share them) might one day be able to handle library OPAC data.

#### *Conclusions*

*Libraries are experimenting with a variety of Web 2.0 tools and services but it appears that existing library management systems are limiting further experimentation and use. While new generations of systems may offer more Web 2.0-like options, these are only now starting to become available.*

## **5.10 Messages and Discussions**

*We said:*

*"Email is useful for fixing up meetings, news dissemination and discussion. While it's likely you'll be using one or more of the JISCmail lists, you might also be using other services.*

*Blogs are not only a way to disseminate news and generate newsfeeds but can also include interactive features (e.g. using Comments to collect information or for short discussions). Blogs can be personal, corporate (focusing on an entire institution or a part of it) or project based. Blog services include Wordpress, Blogspot, Blogger and Typepad.*

*Micro-blogging uses short messages with a limited text length. Informal and 'of-the-moment', people use it to keep in touch and to follow and 'amplify' events. Twitter is often used but other services include Plurk or Jaipu.*

*Wikis can be used for work-based discussions and information gathering. Where institutions offer wiki services, they may restrict access to outside the institution or long-term usage may not be guaranteed past the end of a project. External wiki services include PBWorks (was PBWiki) or WetPaint or Huddle."*

Unsurprisingly, this task attracted a lot of responses. There are indications that the use of email is changing and that the amount of incoming email has dropped. Email lists are still a popular

channel for announcements via JISC mailing lists, though it was noted that repeat postings are often needed. Some people are experimenting with Google Wave but since it has not yet been launched (except in a trial version) neither take-up nor popularity can be predicted at this stage.

For events, it is likely that a Web page, blog or wiki will be set up first, and then an announcement by email but also increasingly on Facebook and Twitter too. Email lists are still used as a current awareness channel but seem to be less popular as a discussion medium, as do discussion boards; on occasion the presence of a small number of vociferous debaters may deter some participants, as do overly-critical responses to queries from new participants.

For some discussions, face to face or voice options are preferred, with mention of both teleconferencing services and Skype. To support these methods, some use is made of tools such as Instant Presenter, DimDim etc.

Many of the comments focused on the use of specific types of service (blogs, microblogging and wikis) and are considered separately in the following three sections.

### *Conclusion*

*JISC email lists are expected to remain a primary (although unidirectional) communications route but are increasingly supplemented by the use of Web 2.0 services for specific types of message or discussion. JISC will need to maintain a watching brief as services develop.*

*The use of blogs and wikis is growing, especially with increasing institutional provision of blogging software. There is concern that institutions are requiring use of institutional software over external services, especially where the intended audience is predominantly outside the institution. Institutions and individuals will benefit from guidance on blogging and setting up blogging policies.*

## **5.11 Blogs**

Blogs began as a quick and easy way for individuals to post material on the Web but are now also increasingly used by institutions. The survey identified fifty-one UK institutional Web sites listing at least one blog; of these most listed between one and five blogs, although two had many more (40 and 75). Libraries were the most likely department to have a blog and there was a single example of a blog by a Vice Chancellor. Some institutions and departments are using blogs as a marketing tool for potential students, while services blogs tend to include service availability and downtime information and the opportunity for feedback as well as promotion.

Blogs are finding a niche as the reporting medium for projects rather than direct emails or sending documents, with open blogs being used to maintain a presence in the community. For one library, the blog provides *'a nice secondary Web page – with links and widgets from Delicious and LibraryThing, etc. in the sidebar'*.

Closed blogs, on the other hand, enable the sharing of information not yet released for public view, the collection and storage of information on specific subjects (training sessions, useful resources, etc.), as well as a way of keeping up to date with developments and specific individuals both in the UK and abroad.

Lecturers use blogs as professional reflection spaces and also as educational tools. A blog can provide a place for students to discuss topics or questions posed by the lecturer and a way for students to request information from a lecturer, while student blogs may form an integral part of a course. Where the blog is to be private (e.g. for course work), the preferred option is often to use the blog function within the institutional VLE, although it was noted that these often lack the range of functionality (e.g. tagging) of an external blog service. Postgraduate students are also starting to use blogs as an online research notebook, where they record interesting references and research progress reports.

Externally hosted blogs are often deliberately chosen over corporate hosting. They are quick and easy to set up (5 to 10 minutes was quoted) in contrast to the time required (possibly weeks from request through to decision) for a blog hosted in a corporate system. They are easy to use and add new entries, and feeds from other resources and services can be embedded. For one institution which cannot update the institutional Web site in real time, it provides a news channel

that can be updated as required. For another respondent the crucial factor was the wish to have a *'different, slightly more edgy non-University feel'* to the blog.

However, some institutions are now insisting that their members use the blogging software they provide. This can be a cause of some annoyance where people are required to move from the external service; it may not be easy (or even possible) to export the earlier content and people may rate the interface of their old service provider as superior in design and function.

## 5.12 Microblogging

Microblogging is increasingly popular, with Twitter appearing to be the market leader; having established a critical mass of users and a well-used API there are numerous associated services. Other services such as Plurk, Indenti.ca and FriendFeed received occasional mentions. One respondent hoped for an aggregator tool that could follow people whichever service they were using for status updates and wondered if Google Wave might be able to achieve this.

Twitter is felt to be very effective at quickly building communities and a network of contacts that often leads to involvement in new activities. Twitter is regarded as good for generating interest and allows people who see your message to re-send it to their contact network, while one respondent noted that it was good for getting quick answers to questions. It was mentioned as being useful to follow UK conferences (especially when overseas) and for some it had, to an extent, replaced following discussion via email lists. One library has a Twitter account and set up a hashtag, which has enabled library staff *'to discuss Web 2.0 within the university without having to follow everyone involved'*.

Twitter is also starting to be used as a fast channel for corporate news, with twelve UK HE institutions using it. Such news ranges from alerts and warnings of computer network downtime, emergency closure of services (e.g. libraries, catering) and high-impact events such as open days, to advertising events, guest lectures, etc.

## 5.13 Wikis

Wikis were popular as a medium for discussion, avoiding the common email problem of people not keeping to specific subject lines, which can make it difficult to follow related messages. Set up for projects and committees, wikis provide a central area to store draft documents and related discussions, as well as a way to create collaborative documents. Wikis work best for a clearly defined group and are less popular and less well-used by larger, undefined groups. Cross-institutional collaborations often choose to use external wiki services where institutional wikis are restricted to institutional member only access.

Wikis are being used as a training resource (e.g. online training sessions, staff manuals and guides, current documentation); these are often very effective as each group of trainees or users can add further information and help, so building a richer resource over time. One lecturer sets up exam revision wikis, where students can collaboratively create and deposit answers to past exam papers. Another lecturer chose to run this sort of forum (with a lot of video, text and image content) using Ning, while another respondent noted that their Facebook group was preferred to the institutional VLE as a discussion forum.

Wikis are also set up to support events. Pre-event they host details of programme, venue, times, etc., while post-event they not only host presentations and additional materials/links but can also provide a discussion area.

For all of these externally hosted services the important factors are (a) they are de-facto world leaders in what they provide, (b) they are used by global communities and (c) they are used by peers in specific subject communities. It was also noted that the right tool or service needs to be selected for the task in hand.

## 5.14 Connecting with People

*We said:*

*“Social networking sites (e.g. Facebook, LinkedIn) can be used to build up a contacts database and to link up with people you’ve worked with in the past. This could be especially useful if career moves mean changing institutions.”*

For some people social networking sites are now the preferred way of keeping in touch not only with friends and family but also with colleagues as *‘It’s easier to disseminate information and keep up-to-date than emails’*. They feel these sites support crossing boundaries (e.g. between library and academic staff) and are a useful alternative email / messaging route when people change jobs and institutions.

Some people feel a need to use different sites for their personal and professional networks, while others like the convenience of a single site. A repeatedly-made point was that the different services have their own demographic and audience sector; people choose the service where most of their contacts could be found and they were happy to move from service to service to keep in touch; as one respondent noted – *‘no brand loyalty’*.

Facebook is the popular choice for contact amongst freshers, alumni and small groups (e.g. specific undergraduate courses) but is less popular at the professional level. LinkedIn is aimed at the working professional but UK signups are building slowly and it is used primarily as an address book. The number of contacts made is a crucial factor in whether people continue to use the service.

Though not a social networking site, for some people Twitter has become the main current awareness route for professional updates and connecting with colleagues inside and outside their own organisation (*‘our staff communicate with peers in industry via Twitter’*). One respondent thought it less ‘heavy’ to use than Facebook, while another noted that *‘it’s a broadly accessible service (and Accessible Twitter even more so) and I think the fact that it supports mobile networks is a great strength’*, while a third respondent speculated that *‘giving out your @... name on Twitter at conferences and events is becoming the alternative/additional enhanced business card’*. While some people feel it demands less time than other ways of keeping in touch, others are reluctant to join, fearing it will take up too much of their time.

Ning social networks enable subject specific networking and one project felt it was more ‘academic-friendly’ than Facebook. For one institution a Ning network was their primary contact space for students post-acceptance but pre-registration since institutional resources could not be used until after registration. An unanticipated benefit was that it proved to be a confidence building process for engagement with Web 2.0 services in general and for coping with the course itself for the large proportion of female mature students on nursing and health courses.

Blogs are also being used for networking. In one institution a blog provides a peer support mechanism for teacher trainees during school placements, together with an equally successful pre-induction blog for new students.

The current limited institutional use of social networking sites is focused on potential students, freshers and alumni, although two libraries also use such sites. Institutional use is likely to grow as increasing number of new entrants are already users. Sometimes problems arise where institutional IT services block access; one librarian noted that he had to update the library Facebook page from his home computer.

Social networking sites are also starting to be used as research tools. A research team examining the branding and marketing of youth leisure spaces – in particular, music festivals and free parties – found that setting up their own social networking profile on sites was more effective in making contacts than the project Web site.

### Conclusion

*The use of social networking services for community building and peer collaboration and support is likely to rise in line with increasing numbers of HE entrants already engaged with these services. However, some departments using external services have found access via work computers blocked by IT support, forcing individuals to update resources from their home set-ups.*

## 5.15 Start Pages and Personal Portals

*We said:*

*"A start page is a Web page designed to organize links or information for the user when a Web browser starts. You design these to incorporate the information you want easily to hand - e.g. news, weather, RSS feed aggregators. They can be private personal pages, or publicly viewable pages that feature a project, department or institution. Example services are NetVibes, Pageflakes, MyYahoo, iGoogle or MicrosoftLive."*

Around half of respondents used these services to bring together various services (e.g. Twitter, RSS and blog feeds, a 'to-do' list using the sticky note function and frequently used bookmarks) in one window, rather than having to open multiple windows. Several people noted their usefulness for those who work on several different computers, on which they may not have their own desktop.

In addition to providing personal home pages, these services are also starting to be used to create public pages. Examples cited were start pages for specific academic courses and the platform for a library current awareness service. It was also used to show academic staff a way of keeping up with Journal Tables of Contents, by importing feeds for ticTOCS; the respondent noted *'This Jisc service [ticTOCS] is really useful, but I prefer to use it to grab the info I need and put it somewhere convenient to me, rather than using the site to manage my tables of contents'*.

Service choice is down to personal preference; Netvibes, iGoogle and Pageflakes are the most popular. Significant Netvibes features influencing take-up were that both private and public pages could be created and that a user could Tweet as themselves and also as a post-holder without having to sign in and out.

Google Reader was a popular choice for aggregating RSS feeds and blogs, being very easy to set up and having a number of useful features: link sharing, recommending feeds based on existing selections, and usage statistics. Users of iGoogle noted that it made it possible to pull together stories from a variety of feeds and then publish them; it can also be used to create and publish a training calendar.

### Conclusion

*The potential of these tools (and institutional software equivalents) for institutional purposes is currently not capitalised on to any great extent. However, they are starting to be used for new purposes.*

## 5.16 Marketing Institutions

*We asked:*

*"Institutions invest heavily in designing an attractive, welcoming and user-friendly Web site but there are other ways of promotion that could be used, especially in trying to reach specific target audiences. So are you trying to promote your institution to a difference audience*

*by using Facebook, MySpace or Bebo? Or maybe you've chosen Flickr or YouTube? Or are you trying some combination of services?"*

That there were few responses probably reflects that there is still a heavy reliance on institutional Web sites for marketing. However, the comments recorded do indicate a growing recognition that this unidirectional way of contact with users will increasingly be supplemented by the use of Web 2.0 tools and services.

Respondents were clear that the most important factor was the need to have a presence where the (potential) audience is likely to be – social networking sites, image and video sharing sites, blogging or microblogging. This might be just a 'shop window' that duplicates information on the official Web site or a place to redirect people to that Web site but even in these cases, the referral traffic from YouTube and Flickr can be quite high. In other cases there is a more active approach offering people the chance to 'meet' other people and/or share content. For example, some institutions have blogs targeting potential students and freshers; in these current students share the experience of student life while administration offers advice on how and when to apply, open days, accommodation, etc.

#### *Conclusion*

*An increasing proportion of potential students and alumni already use Web 2.0 services to a greater or lesser extent, with the result that more institutions will be using them in the future. Institutions new to these services will need advice on how they can be used most effectively.*

## **5.17 Virtual Worlds**

*We said:*

*"Virtual worlds such as Second Life can be used for different purposes: scientific modelling (e.g. Nature uses Second Nature for molecule modelling), learning resources or marketing your institution."*

This section also attracted few responses; this is probably reflects the 'early adopter' nature of many of the respondents. Although some comments and case studies mentioned institutional participation in virtual worlds, only one institution included a link to its virtual world (in Second Life) on its externally facing Web site. The majority of comments focused on Second Life, with a few comparing the user interfaces, usability and graphical content of Second life with other virtual worlds.

For one group, Second Life itself offered (a) a poor user experience, (b) an interface daunting for non-enthusiasts, and so unsuitable for anyone nervous of new technologies or without the time for a long learning experience, and (c) compared badly against other virtual worlds. Technical issues were identified as significant – it must be downloaded on to a PC but often users do not have the administration rights to install such programmes, and it will not run in a browser window. However, this group also recognises that there may be a role for virtual worlds in the future.

The second group were more enthusiastic, feeling that virtual worlds have a huge potential for the education sector – 'as a place for learning, teaching, communication, creating 3D representations of ideas and concepts, going to conferences & making contacts' – while not minimising the challenges. This group accepted the learning time requirements and the continuing effort required to create, develop and use virtual worlds as worth the end benefit, but identified a need for people who can advise when technical problems are encountered and recognised that issues can be opportunities as much as obstacles.

Specific examples given were:

- Offers a range of non-combat driven role play communities. Examples are re-creating the experience of being a paranoid schizophrenic or a wheelchair user.

- An immersive and interactive environment to improve foreign language oral skills.
- A place where (healthcare) lecturers and students can work in a global setting.
- Virtual meetings, presentations, poster sessions, etc. can be a better experience than video conferencing.
- Virtual laboratories – *‘these are just about feasible at present’*. Experiments might be outsourced to specialist providers with researchers having a virtual involvement; this would bridge the gap between doing an experiment in house or handing over control to someone else.
- In the geographic area, the 3D modelling capabilities of SL (and Google earth) have much potential for academic applications.
- Machinima films (made in real-time using avatars as virtual actors and SL as the film-making environment) could have a tangible cost-saving role in producing animated training materials.

### Conclusion

*Successful use of virtual worlds requires (a) a reason for using them, (b) time to explore their features and (c) some technical support for the less technically proficient. Use of such services is still largely experimental.*

## 5.18 Mashups and Mixed Services

*We said:*

*“Mashups allow people to combine existing web services and/or data to provide a new service; they can be used to provide added value to content already held. Mixed services are those which combine elements of other services. An example of this is WikiMapia, which is a combination of GoogleMaps with a wiki structure and options to include links, images and embedded video.”*

The minimal feedback indicates that this area is still mostly experimental.

Although the JISC Developer Happiness Days were cited as good opportunities for experimentation, it was also thought that mashups and mixed services will only really take off as the tools become less coder oriented. One respondent noted the lack of common points to support certain types of mashup (e.g. chemical identifiers for data mashups) though this was expected to change over time.

Yahoo! Pipes was thought to be easy to use, not requiring considerable technical expertise or programming aptitude, while the Google Apps Engine was *‘much easier to use than I thought and is quite powerful’* and Googlemaps was cited as a simple way to display geo-related information.

Actual examples cited were few. Netvibes start page software was used to bring together existing Web services to provide a new current awareness service from a library. One respondent viewed Twitter as essentially a mashup, with people doing the linking. A more interesting join-up of services saw one respondent using Google Latitude to track his location, which Clark (software for the Macintosh) feeds into Fire Eagle, which feeds the blogs (using blogloc) and also Google Maps to produce a map; his travels are mapped using GPS and EveryTrail, taking information from satellite navigation and plotting the trips on Google Maps and posting this to the blog; linking them with images on Picasa produces a pictorial record.

The term ‘mixed services’ was also taken to cover machine-to-machine interfaces and Web services, and not just explicitly Web 2.0 technology, though Web 2.0 APIs could be part of this.

## Conclusion

Although probable that mashups and mixed services will not become a standard activity for many in UK HEI, it is possible that a lack of knowledge and appropriate examples as inspiration are deterring some people. There is a role for JISC to play in keeping the community informed on the potential of this activity.

## 5.19 Any Other Task

*We asked:*

*"Are you using any Web 2.0 service for tasks we haven't mentioned? If so, we'd like you to tell us about them."*

Crucially, Web 2.0 is now being used within the teaching and learning environment and the general feeling is that this will expand over time. The aim is to make lectures more interactive, to foster collaboration and discussion and to extend the learning activities beyond the actual teaching session. The fact that students could access these services when not logged onto the institutional network was cited as the main advantage, enabling a flexible approach to academic work. One respondent reported:

*I much prefer Web 2.0 services to institutional services because they are generally more reliable, faster, prettier, easier to use, have an existing bank of expertise and support resources, and are usually more engaging for the students. There is also less bureaucracy involved than when setting things up via institutional systems. In terms of inquiry-based learning, the ability to get students to collaborate and construct knowledge for themselves makes the technology align well with the pedagogy, which is not necessarily the case with things like the virtual learning environment. I think the students learn valuable transferable skills simply by having to use new services too.*

As mentioned in a previous section, there is some experimentation using virtual worlds as an online teaching and learning space but other tools are also being used for teaching and learning activities. As examples, blogs are being set as an assignment as part of assessed course work and wikis are used as teaching tools and revision aids, while live teaching sessions have been augmented by accessing online services during the session and the students then sharing references and links found using Delicious tags and Twitter.

Both research students and supervising staff use Web 2.0 services. At this level, students may well also be working as part-time lecturers or freelance consultants, with a need to manage a variety of resources and different workloads; one way to do this is by keeping everything in the cloud using web applications. For students, a blog can be an online researcher's diary, recording various strands of research thoughts and the progress of the research; it can also attract information from others by way of comments. Web 2.0 can also support supervisors – lecturers can keep in touch with students who manage all their documents via a blog and use calendar services to book individual and group meetings, especially useful when students are also working outside the institution.

One respondent used a Web 2.0 service for file storage. *'There's DropBox, a storage application and provider. I think it could be the best Web 2.0 tool out there – it's just phenomenal. Using DropBox I can synchronise filestore between my workstation images (I have a dual-boot workstation at work), across platforms (my laptop is a MacBook Pro), from work to home and back again, and from any workstation connected to the Internet, anywhere! Your filestore is always available to you!'* Another contributor questioned whether their university VLE is still needed, since its main function is as a file store, which they believe Web 2.0 applications such as Box.net can provide.

A different approach is being taken by one university which has recently purchased uSpace (formerly Clearspace). This is unusual because uSpace integrates the functionality of discussion forums, blogs, wikis, IM chat and VOIP under one unified user interface. It will be interesting to see if the benefits of this integrated approach outweigh the appeal of choosing from a variety of different social networking services.

Sometimes services were used for tasks usually carried out by other tools designed for the purpose; for example, using Twitter as a search tool to find people and Web sites.

There can also be unexpected benefits to using Web 2.0 tools, as one respondent currently helping a small town in Canada with its local archives noted. Funding and IT services were minimal and using Flickr gave the images '*a much higher profile than any local system could have achieved*', resulting in the donation of new materials to the archives and the sharing of digital materials held elsewhere.

#### *Conclusion*

*The use and application of Web 2.0 tools and services is still predominantly by early adopters who are happy to experiment. As usage becomes more pervasive and mainstream, it would be useful to provide an ideas bank to support those new to Web 2.0 services.*

## **5.20 Judging What's Good and What's Not**

With such a range of applications and services available and more being developed, there is a real need for people to be able to evaluate a particular service. The question of evaluation was put to the case study subjects, with a clear consensus in their responses. The points they raised fall into two categories: observations and a set of questions that need to be asked.

#### Observations

- There needs to be a reason for using something.
- Experiment – be willing to try something out and see how it performs – only then will you really know what it can do.
- Follow recommendations from early adopters, peers, people (in and out of academic life) whose judgement you respect and friends who are 'tech-savvy'.
- If it's useful, you'll find yourself using it in no time.
- Sometimes you'll reject a service first time round but later on find it just the right tool for a task.
- A service or tool that works for one community does not necessarily work for another community.
- The features of a service need to match the requirements of the task.
- Ditch the services and tools that don't work.
- Market penetration is important – the market leaders have many users who rely on them and are likely to address any issues quickly.
- It needs to be accessible from any device, including mobile technology.
- Aggregators are useful since there are now so many services that people are using.
- Evaluate the risks of what you would lose if the service folded, then make judgement based on that risk assessment. Backing up content elsewhere can minimise risks.
- Sharing something with a closed group of people or making it completely open will create different tools; each useful in their own way.

#### Questions

- Does it let or help me do the task I want it to?
- What can it do and what can't it do?
- Is the content free, shared and shareable?

- Is it platform independent and browser independent?
- Is it open source? This enables others to develop extra functionality and give the tool a wider potential user base.
- What is the quality of the content?
- Is it easy to use? Most people won't pursue anything that requires you to read a manual.
- Which service is being used by the people I want to view and/or engage with my content?
- Do I need specialist software?
- Does it have widgets? These allow you to embed things from one place or service in something else.

### *Conclusion*

*These observations and questions form an effective checklist against which to evaluate the utility and effectiveness of a service or application. JISC should encourage projects they fund to pay particular attention to these factors when developing systems and interfaces.*

## **5.21 Looking into the Future: opportunities (and some challenges)**

It is difficult to predict to what extent Web 2.0 will become integrated with the academic digital landscape and what impact it will have but respondents were generally positive that Web 2.0 tools and services are here to stay and will increasingly be used. They thought that this would inevitably change the way students, staff and institutional services work, noting that using Web 2.0 poses its own challenges which need to be recognised, allowed for and addressed.

The rate of change and development is rapid in the Web 2.0 environment. Web 2.0 has empowered people – lecturers no longer have to request IT services to put up video content (which would only happen several weeks later) but can now simply post it to YouTube. As one respondent noted *'I think IT departments will have to change their views on timescales; we can no longer say 'yes, we can do that, but it will take a year'*. Institutions and their technical support teams will therefore need to monitor developments continually and respond quickly. It was thought that IT services would need to move from wanting everything under their own control as *'the most appropriate applications to use in teaching and learning aren't always within the firewall'*. And if a large proportion of staff and/or students are using a service (e.g. Facebook) then IT services need to look at ways to support people who need to engage with that service. The point was made that in some cases global enterprise platforms deliver services better than individual institutional services would be able to do. As a case in point, the University of Sheffield outsourced student email provision to Google from September 2009 with IT services providing user support.

The take-up of some services is partly influenced by social factors. Social networking services attract differing audiences; currently MySpace appeals more to UK school students, with Facebook being the choice of university students. Interestingly, in social networking people move from service to service as they join new communities and the preferred online social spaces for teens and early twenties seems to change rapidly. Institutions and staff would like an easy way to discover the current service of choice of their students and potential students so that they can engage with them in that online space.

Other social factors also have an impact on takeup, such as varying personal views on making learning resources available – an undergraduate reported that while many lecturers do put lectures on the web, others do not because they believe it will lead students to stop attending lectures. This of course is a wider issue than Web 2.0. Perhaps unsurprisingly, two undergraduates interviewed (one science and the other humanities) had never heard of the term Web 2.0. And the only Web 2.0 service they (and their friends) use regularly is Facebook; they do not look beyond the institutional VLE – for learning resources and discussion boards.

It appears that not having a convenient place within an institution to put things online is a common situation for many people. Equally, as people move from institution to institution they

may find their content locked within institutional systems that they no longer have access to. This makes the free and freely available services for sharing text, images, video and presentations an attractive solution.

Some institutions are now providing their own collaborative social networking environments (which include blog, wiki and social networking features); it will be interesting to see how much use is made of them and how much people will still want to use the cloud. There will be occasions when using an institutional service could be the right choice (keeping assessment and marking information confidential) but with increasing numbers of entrants to higher and further education already using the global enterprise services, it is likely people will continue to also use external services during their time in education and following it.

Several respondents noted that using externally developed and hosted services does bring an attendant risk of losing content if the service folds. Typically, this did not deter people from using them altogether but did influence their choice of service and what back up measures they put in place. Market leaders (bigger services, with a large user base) are preferred over smaller services, unless these have a particularly useful feature. Saving the content in multiple locations or services was the usual method of guarding against loss of content due to service closure. Blog content can be problematic; sometimes this can be migrated to a new blog hosting service but not always. For some people the answer is to write and store the text elsewhere before posting on the blog. There is less concern over access to older Twitter content but much of this loses its relevance as time passes, with the exception of at-the-event messages.

Signing up to RSS feeds was generally recommended as more time effective than visiting multiple sites; however, signing up to large numbers of such feeds can be overwhelming and people are turning to aggregators (e.g. Google Reader) to reduce incoming information to a manageable level. Although current aggregators perform a useful task, for one respondent the goal was to find reliable aggregated real-time social search tools.

There was recognition that Web 2.0 offers a rich store of content which researchers can investigate using a variety of tools. This opens up a whole new area of research together with new research techniques. But this brings with it other concerns as one respondent noted: there are '*issues around identity, anonymity and authorship on Web 2.0 platforms [that] make this a troubling space in relation to the ethics of conducting online research*'. Another respondent reported:

*A key problem in UK HE is that Web 2.0 only works with sufficient data and sufficient communities; secondly there needs to be a problem that people recognise needs to be solved for them. However there aren't actually very many people in the UK HE scientific community (Wikipedia works because thousands of people contribute). The solution is either to broaden the community – bring in the public (like Galaxy Zoo), or to raise the engagement rates – getting people to make their research available, and comment on colleagues' work as a regular part of their day to day workflow.*

There is some concern about the level of information that these online services are building up about individuals (and whether they might divulge this to third parties if their service collapses) and about what is public and what is private in some services. Current institutional and other guidelines for online research do not match the reality of the Web 2.0 environment where content creators focus on sharing, mixing and re-using their own and other peoples' content. Another concern was that of using the same password on multiple services – a common risk when trying out many different things.

Another respondent raised the issue of trust as a major issue, noting that this is relevant even in email lists, citing a specific incident where a 'newbie' raised a basic question that was slated by some list members. Although the list moderators were proactive in emphasising that all types of question were welcome, fewer such questions were posted following this. This respondent also noted that in some communities fora and discussion groups don't work: '*if you work with*

*sensitive information or in a sector where there are many different views on how things should be done, you perhaps don't want to commit your opinions in writing - even under a pseudonym'.*

There was recognition that (as this survey confirms) it is difficult to know what is being used within an institution '*except in a partial and anecdotal way*'. There is an awareness that people's usage of Web 2.0 varies from the early adopters using of a wide range of services (on whom it has already had significant impact) to those who want nothing to do with it at all. There is worry about the digital divide and levels of new media literacy (especially for mature and distance learning students) and a recognition that the full impact on institutions will only come when the majority of the academic population is using Web 2.0. It will be important to find ways of helping people bridge the gap through advocacy and sharing best practices.

Finally, there is a view that we are at change point in both education and corporate life. Web 2.0 changes relationships between teacher and the taught and enables fast spreading of new knowledge together with new community and group based ways of working. Other drivers (economic factors, environmental issues and changing student expectations) are forcing the academic sector to be innovative and experimental, using things when they do work and dropping things when they don't work or something better (or more widely used) comes along. The rate of change is fast and academic institutions (including JISC) often find it difficult to react quickly.

The following quotes from two respondents from different support services neatly sum up the situation.

Librarian

*Why would I use these cloud resources and not say, some JISC funded resource? Because they are the defacto world leaders, because they are what the global LIS community are using and there is no need to use some local, UK centric product. It's for the same reason I use BASE or OpenDOAR over Intute RS. I don't want to discuss issues with a limited audience - this is a global era of communication. I want to search and speak with the world.*

IT Services staff

*Should JISC be developing more services? Not necessarily. Something like the Depot as a central store for people whose institution doesn't have its own repository is great. It serves a specific purpose and doesn't replicate what other people are doing. But they do need to keep that platform independent mind-set. There was something recently that didn't work on a Mac - that's not good. But JISC shouldn't try to do everything - there will be things where Web 2.0 is better, especially where scale counts.*

## 6 Appendix 1: List of case study subjects

Karen Anderton	3rd year Ph.D. student, Transport Studies Unit, University of Oxford Centre for the Environment
Becka Currant	Head of Learner Development and Student Engagement, University of Bradford.
Nadine Edwards	Senior Academic Services E-Librarian, University of Greenwich
Marieke Guy	Research Officer, UKOLN
David Harrison	Assistant Director of Information Services at Cardiff University
Amanda Hill	JISC Project Manager for the Names Project (pilot national name and factual authority service) and archivist for a small town in Canada
Gareth Johnson	Subject librarian and repository manager at the University of Leicester.
Nicola Jones	Press and PR Officer, Birmingham City University. Additional contribution from Matt Machell, Web Interface Designer, CICT at Birmingham City University.
Brian Kelly	UK Web Focus at UKOLN
Sarah Lewthwaite	Ph.D. student, Learning Sciences Research Institute, University of Nottingham
Manish Malik	Senior Lecturer in mobile and wireless computing/engineering area and university L&T fellow at the University of Portsmouth.
Yvette Morey	Research Officer, Department of Psychology, University of Bath
Cameron Neylon	Biophysicist with the Science and Technology Facilities Council (STFC), with a smaller research role at the School of Chemistry, University of Southampton.
Nicola Osborne	Social Media Officer, EDINA Data Centre
Lyn Parker	Quality and Development Team Manager, Sheffield University Library Service.
Paula Roush	Lecturer on digital photography at London South Bank University and on and creative arts and media at the University of Westminster
Christine Sexton	Director of Corporate Information and Computing Services, University of Sheffield.
Stephanie Taylor	Research Officer, UKOLN and consultant.
Martin Weller	Professor of Educational Technology at the Open University.
Sheila Webber	Senior Lecturer, Department of Information Studies, Sheffield University
Anne Welsh	Library and Information Sciences lecturer at University College London.
Jamie Wood	Learning Development and Research Associate at the Centre for Inquiry-based Learning in the Arts and Social Sciences at the University of Sheffield and a teaching assistant in the History Department at Sheffield.

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