

LibPortal Project: Case Studies of Portal Implementation in Higher Education Libraries – a report to the Joint Information Systems Committee

Yvonne Hamblin
Research Associate
LISU
Loughborough University
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Name	Position	Name of Institution	Library Portal
Martin Myhill	Deputy University Librarian	University of Exeter	Millennium Access Plus
Owen Stephens	E-Strategy Co-ordinator	Royal Holloway, University of London	MetaLib
Anne Ramsden	Electronic Services Manager	Open University	ENCompass
Marcus Woolley	Head of Library Development and Academic Liaison	University of Luton	Millennium Access Plus
Richard Cross	Resource Discovery Project Assistant	Nottingham Trent University	MetaLib

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Glossary

API	Application Program Interface, a set of routines, protocols, and tools for building software applications.
Athens DA	Athens Devolved Authentication allows an organisation to maintain a single set of credentials for a user, and for that user to be authorised for access to online services depending on permissions defined by the user's organisation. (http://www.athensams.net)
Cross-searching	Function which allows the simultaneous searching of selected databases.
Customisation	Customisation allows the host organisation to customise the portal interface and its content.
De-duplication	Allows the delivery of search results without duplicate references.
HTML	Hyper text markup language is an authoring language used to create documents on the internet.
KnowledgeBase	Knowledge Base (MetaLib) or 'knowledgebase' is a 'managed' set of electronic and print databases, which can be amended by the supplier or by the organisation, according to the portal product.
LDAP	Lightweight Directory Access Protocol. LDAP servers allow users to access information directories and for search results to be filtered according to their level of authentication.
LinkFinder <i>Plus</i>	Allows links to full text resources (Endeavor's product ENCompass).
MAP	Millennium Access Plus, the portal product from Innovative Interfaces Incorporated. (III).
Middleware	A layer of software between the network and the applications. Software provides services such as identification, authentication, authorisation, directories and security. Middleware prompts standardisation and interoperability and facilitates the operation of advanced network applications. (http://middleware.internet2.edu)
OPAC	Online Public Access Catalogue
OpenURL	The OpenURL standard is a protocol for interoperability between an information resource and a link server, which offers localised services.
Personalisation	Personalisation allows search results from database searching to be sorted and/or saved by individual users.

SFX	MetaLib's linking technology to access full text resources (Ex Libris).
SSO	Single Sign On. This enables a user to enter his/her user credentials (or password) once in order to gain subsequent access to a number of disparate resources. This system is supported by Athens.
VPN	Virtual Private Network is a private network that connects remote sites or users together. A VPN uses "virtual" connections routed through the Internet from the organisation's private network to the remote site or employee.
WAM	Web Access Management controls access and authentication to databases, as required by the library. (III's product, MAP).
WebEX	WebEX is an online conferencing system which enables Innovative Inc's staff to take control of the client's PC/screen at a pre-arranged time and also to contact the client over the phone simultaneously. It can be used for one-to-one tutorials with III staff and also for fault analysis.
XML	Extensible Markup Language XML is a markup language for documents containing structured information. Structured information contains both content (words, pictures, etc.) and some indication of what role that content plays (for example, content in a section heading has a different meaning from content in a footnote, which means something different than content in a figure caption or content in a database table, etc.). Almost all documents have some structure. A markup language is a mechanism to identify structures in a document. The XML specification defines a standard way to add markup to documents.
XSL	Extensible Stylesheet Language is a family of recommendations for defining XML document transformation and presentation.

Executive Summary

This report completes the work of the LibPortal Project which has reviewed the development of library oriented portals in higher and further education. The Joint Information and Systems Committee (JISC) commissioned a series of case studies as part of this work and these are reported upon here. The case studies cover three portal suppliers, Ex Libris, Endeavor and Innovative, and five university libraries at Exeter, Royal Holloway London, Nottingham Trent, Luton and the Open University. At the time of the review no further education college libraries had purchased a commercial library portal. Detailed information about the portal products is available from the suppliers and the libraries who participated in the case studies have stated that they are willing to be contacted to offer advice and information to other libraries who may be considering implementing a portal.

The case studies are intended to assist libraries in the decision making process of how to manage their electronic resources, and whether or not a portal meets the requirements of the library. The portal suppliers have worked with libraries to improve their products, which has resolved many of the difficulties faced by the early adopters of portals. However, libraries are advised by these case studies to determine the aim of the portal, discuss their requirements with the supplier and to plan the implementation to a timescale.

Interviews with representatives of the five university libraries were based around: the process prior to implementation, the functionality of the portal, implementation and the effect of that on staff and users, impact measurement and the future development of the portal.

The following recommendations are made:

- The purchase of a portal is a substantial investment so the suitability of a portal to deliver electronic resources in a particular library should be considered
- Consult other libraries with portals for advice and to determine what skills will be required during and following implementation
- Contact portal suppliers to provide on site demonstrations
- A small team approach has proved to be the most effective way to combine the need to action the implementation and to consult key staff simultaneously
- Allow ample time for planning the implementation of the portal and its implications for users
- Check the compliance of the access protocols for the databases which are to be placed within the portal
- Determine any 'hidden' costs, such as staff time, to implement the system, carry out upgrades, also staff training and user education
- Include the portal in staff training programmes and ensure that library staff have time to familiarise themselves with the new technology

- Check the portal thoroughly but do not be afraid to make it ‘live’ for users
- For ease of use, work with the supplier to provide a ‘user friendly’ interface
- Manage user expectations if necessary through user education sessions. Search capability may not match their experiences of using internet search engines
- Set up performance metrics in the planning stages of implementation and collect evidence to demonstrate the value of the portal in the delivery of electronic services to users
- Consider the development of an online tutorial to promote a ‘self-help’ culture.

1. Introduction

These case studies are the third part of the LibPortal Project which LISU has undertaken for the Joint Information and Systems Committee (JISC). A review of library oriented portals was published earlier this year (2004). Entitled *LibPortal Project: Access to Library Provided Resources: A Survey and Review of Library-orientated Portals in Higher and Further Education*¹ the report investigated the development of commercially produced library portals in these sectors, as well as those created in-house. At the time of the survey in September 2003 there were only a few early adopters of portals which had the systems operational. One of these libraries was the subject of another JISC funded study by LISU and the report, published in October 2003, related the experience of the Pilkington Library at Loughborough University which implemented MetaLib in 2002.² Some of the higher education libraries surveyed for the JISC review were in the process of implementing portals and have subsequently been interviewed for this report. There was no evidence of portal development in further education libraries at the time of the review.

This report presents five case studies of libraries that have implemented portals to manage their electronic resources. Three portal products are represented: Innovative's Millennium Access Plus, Ex Libris' MetaLib and Endeavor's ENCompass. Other portal products are available but our research has shown that these three products are the main ones adopted by libraries in higher education in the UK.

The case studies cover the implementation of a library portal from its purchase through to it 'going live', with information from the library staff involved in the process. They are designed to offer an assessment of the implementation of a library portal solution in a higher education library. Through the interview process general issues around purchase, implementation, ongoing development and maintenance have been raised and discussed to act as guidance to other libraries who may be considering the best way to manage electronic resources. The case studies report on individual experiences and are not intended to criticise the libraries or the suppliers in any way. Valuable lessons can be learned from the experiences of the early adopters of library portals, both by the suppliers and other libraries. It should also be recognised that portal products are in a state of continual development and that each new version of a product incorporates refinements suggested by user libraries. The availability of access to full text is going through a period of change as publishers are making their electronic resources more accessible.

The report has a section which gives a brief overview of the composition and functionality of each portal product. This information is taken from the literature or web sites produced by the suppliers, who should be contacted for more details as required, or to answer specific queries.

The debate continues about the definition of a 'portal'. The products described in this report are all true portals in that they offer a single point of access to a variety of databases and a range of functionality including cross-searching. The term 'portal' has been used here to describe a commercial product which has this functionality, but two of the libraries have decided to avoid using the term when speaking to users and have concentrated instead on the promotion of the technology and services the portal provides.

¹ Report is available on the web at

http://www.lboro.ac.uk/departments/dils/lisu/pages/projects/libportals_project.html#libportalfinal

² Hamblin, Yvonne & Ruth Stubbings, *The Implementation of MetaLib and SFX at Loughborough University Library*, JISC, 2003. http://www.jisc.ac.uk/project_portal_casestudies.html

1.1 Methodology

LISU has received positive feedback on the earlier MetaLib case study³ and the areas covered in that report formed the basis for the questions prepared for these case studies. The questionnaire was divided into sections to cover:

- Choosing a portal, including who was involved, and why this route was taken
- Pre-implementation, any concerns and how these were addressed
- The aims of the library in purchasing a portal
- Support and training provided by the supplier
- How the portal was implemented, including timescale
- The functionality of the portal, including sign-on and the user interface
- Staff skills and training required to implement the portal
- Promotion and user education
- Impact measurement and usage figures
- The future development of the portal
- Advice offered to other libraries

A copy of the questionnaire can be seen in *Appendix 1*.

It was originally intended to conduct interviews by telephone with the members of staff from each library who volunteered to be involved in this research, but it became apparent that it was easier for the interviewees to have the questions by email and to reply in their own time. They were then able to consider their responses to the questions, consult with colleagues and return the completed questionnaire to LISU. Only one interviewee opted to conduct a telephone interview.

Following the initial response, the interviewees were then contacted to clarify certain statements and to obtain more information about any usage statistics they had collected. The libraries who had implemented a portal which had been operating for some time were willing to share those figures. All the libraries offered to share their experiences with other libraries considering the purchase of a portal, including site visits, where appropriate. The interviewees were sent the case study to check through before publication.

³ Hamblin, Yvonne & Ruth Stubbings, *The Implementation of MetaLib and SFX at Loughborough University Library*, JISC, 2003. http://www.jisc.ac.uk/project_portal_casestudies.html

2. Information on Innovative's Millennium Access Plus

This section gives a brief summary of Innovative Interfaces Inc's (III) product Millennium Access Plus (MAP). It is not a technical description but is intended to explain the functionality and set up of this portal product. Further detailed and technical information can be found on the III web site <http://www.iii.com> from which much of the summary below is taken.

MAP is made up of three independent components: WebBridge, MetaFind and Web Access Management (WAM). By providing contextual linking, multi-protocol meta-searching and authentication, MAP enables libraries to manage and control access to all of their electronic resources.

WebBridge offers a full linking capability, enabling libraries to link information resources together where appropriate. Any resource which is WebBridge enabled can be listed and linked to the library OPAC or staff module. Bibliographic databases which support OpenURL technology can be linked from WebBridge, with retrieved articles or other types of resources matched against a local holdings knowledge base (electronic and/or print). The user can then connect, as appropriate, to the full text itself. WebBridge works with any OpenURL-enabled resource, and in many cases also with resources that can be searched using a stable URL even if not specifically OpenURL-enabled.

MetaFind facilitates cross-searching of diverse resources through a single search, across a variety of protocol. Results are integrated and presented to the user through a library interface. Results include hyperlinks direct to the source and can be sorted in a range of options including relevance, date and alphabetical listings.

Web Access Management uses a proxy server to control access to licensed web servers, allowing home and remote access to users, as designated by the library. WAM therefore controls both access and authentication for each database, as required by the library. It also allows the generation of usage statistics in a graphical format.

All three components integrate to produce a single tool for controlling all types of access across the collection of databases.

3. University of Luton – Millennium Access Plus

3.1 Introduction

The University of Luton library has purchased Innovative Interfaces Inc.'s portal Millennium Access Plus (MAP) and has upgraded to the latest version, Millennium Silver⁴.

3.2 Choosing a portal

The library made the decision to purchase a portal product because it offers the functionality to provide users with improved access to electronic resources. The technology offered by the portal enabled the library to develop further its service to its users, and this was the primary consideration in implementing MAP. Innovative do not refer to this product as a library portal, instead they promote it as a facility to improve information retrieval capabilities.

It should be recognised that there continues to be some debate about the definition of the term 'portal' and in contributing to this series of case studies, the library at the University of Luton have stated that the average user does not want to differentiate between a library/information portal, a subject gateway and an institutional portal. The user wants integrated delivery of information resources and Luton's primary aim in purchasing a portal product was to enhance access to electronic services for their students. Indeed, Luton prefers not to refer to their purchase as a portal, but as an extension of their learning resources.

Involved in the choice of product were the Deputy Vice Chancellor (Academic), the University Librarian, the Head of Library Development and Academic Liaison and the Library Systems Manager. There was also consultation of other staff, including the Systems and Networks Department and the Learning Technology Support Department, to ensure compatibility and interoperability. The University Finance Department were consulted, as were the Teaching Quality Enhancement Department, to ensure that the system would meet academic requirements.

A needs analysis was carried out prior to purchase because the system was to meet a very specific purpose, that is: to extend the academic materials and support available to distance learners. The library did not go out to tender because the scope of the project was specific and included a short timescale from bid to delivery. There were also only four suppliers who were able to supply a suitable product. A confidential competitive quotation process was followed, as required by the University's financial regulations.

Potential suppliers were asked to demonstrate their systems, reference site visits were made and a 'whole life' product cost evaluation was undertaken, including a project risk analysis. The small scale of the project deemed it unnecessary to use a formal project management methodology to manage the project.

The specific aim of purchasing a portal product was to extend the services to distance learners and the functionality offered by MAP was considered to be especially beneficial to this group of users as they do not have access to the information literacy teaching opportunities available to students on site. The results of the portal are, however, beneficial to all.

⁴ See <http://www.iii.com> for further information (accessed 10/9/04)

Millennium Access Plus was chosen for a number of factors, the most important being 'fit for purpose' and value for money. The product chosen was able to provide the functionality necessary for the library's requirements and had the advantage of being provided by the same supplier as the library management system. The library had a good relationship with Innovative and the portal required no additional hardware to implement. At the time other portal products were more technologically developed but MAP offered 'best value' to the library at the University of Luton, both in terms of cost and technical requirements.

The budget allocated to the purchase and development of MAP has been sufficient for implementation and development.

3.3 Pre-implementation

Prior to implementing MAP's product, the library were concerned that LDAP authentication was not available as the university programme for the integration of services was not as far advanced as anticipated. The supplier has introduced LDAP compatibility to overcome this. There was also concern that the new technology would not be exploited effectively but the development of an information literacy programme and remote support materials have helped to overcome this. However, the library has not been able to embed the new technologies into information literacy teaching as comprehensively as had been intended.

Support provided by Innovative included online support materials and training in the form of a web cast support tutorial and a telephone tutorial. The support was considered to be adequate because most of the technical implementation was carried out by Innovative. The disadvantage of this has been that the library has been unable to progress the functionality as quickly as they would have liked.

3.4 Implementation

The library at the University of Luton only had a basic project plan as the implementation of MAP was not seen as the introduction of a new product, more the extension of an existing one. The library management system already held one component of the MAP portal product, that is, Web Access Management (WAM), installed in 2001. Implementation of the additional components, WebBridge and MetaFind, were perceived as part of the standard upgrade plan rather than part of a new system. The project plan included consultation with library staff to ensure they understood the improved functionality, the implications of this and the new responsibilities for staff.

A review of the OPAC was undertaken to ensure that the new search and retrieval tools were offered in the most intuitive way the library users.

The technical implementation was managed by the Library Systems Manager. Other facets of the project, such as interface design, support and staff development were managed by the whole team. The project took two months from purchase to implementation, but not all the functionality promised by the supplier was available at the launch date due to delays in development. The 'portal' was not piloted but launched to everyone as soon as possible.

3.5 Functionality and content

At the University of Luton, MAP is an extension of the library management system and is seen as contributing to a holistic approach to the library's support of learning, rather than being a separate entity. It was always the intention of the library to integrate their systems with other systems in the University to facilitate easier access to electronic information resources. This is still a primary aim but until the planned institutional portal has been developed and common interfaces are in place, the functionality will not be available to provide full integration.

The portal allows cross-searching of databases, limited customisation by the library (but not personalisation by the user), de-duplication, refining of search results, email alerts, record searching and basic and advanced search options. The library has placed as many databases as possible within the portal but there are still a number of outstanding titles that Innovative customers would like to be added to the cross-search facility. There are still some database publishers who have not made their databases OpenURL compliant, although these issues are being addressed.

Library users are offered a single point of entry to databases, web links to the library catalogue, reference linking to full text from bibliographic databases and links from reading lists. Access to databases is via the library catalogue or the web site, with 98% of the digital information resources available via the system's proprietary Internet Provider based autoproxy authentication service (WAM) allowing users to login to the resources using their library account. This authentication is invisible to the user when accessing from a University site. External users are given the choice to access resources via WAM or by Athens authentication.

The current expectation is that all student information resources, including IT resources, IT based teaching resources and institutional data, will be accessible using LDAP authentication by September 2005.

3.6 User interface

A substantial part of the MAP interface is under the control of the supplier. The library is permitted limited customisation and branding. The portal at Luton has not been named as there has been no requirement to do so. The system does not allow the most important interface screens, the search facility, to be customised.

It is envisaged that there will be a single interface to all student technology by September 2006 and that this will include single sign on capability.

3.7 Staff skills and training

The initial training from Innovative was comprehensive. Most of the implementation work was carried out by the supplier. The Library Systems Manager had the required technical and procedural skills for the project.

The academic liaison team would have benefited from more explanation and training. A fuller brief on the technology, its advantages and applications, would have had a positive impact on promotion of the new technologies to staff and students. Configuration of the WebBridge product required some self development on the part of the staff.

All library staff required familiarisation training which was provided on a department by department basis. The academic liaison team are responsible for promoting and providing any training required by the academic staff and this has been organised on a needs basis.

3.8 Promotion and user education

Promotion of the additional services available through MAP, and any user education necessary, have been incorporated into the information literacy programme. Detailed information is not provided to users during induction, but techniques on searching for information are included in early teaching sessions, including some of the advantages and pitfalls of the new technology. The University of Luton has not found that explanation of the additional search technology has required extra staff time. The library is aware that there is a need to provide more intensive information retrieval training to ensure that the students are able to make best use of the new products.

There is no specific tutorial for MAP at Luton but currently there is a general review of all remote support materials for information literacy. Part of this brief is to look at the provision of a more interactive remote training capability, and reference linking and meta searching should feature in this.

Marketing of the new search technology is done through information literacy teaching, guides and plasma screen presentations available in the library. There is an online tutorial to help with finding information from Learning Resources.

3.9 Impact measurement and statistics

Database usage figures are collected in-house and by individual database suppliers. One of the aims of the initiative Project COUNTER⁵, has been to standardise this by developing a Code of Practice to ensure that any collection, analysis and evaluation of data can be reliable. Figures are available on the network for all Learning Resources staff at Luton, for example, but with a caution that there is a lack of standardisation.

There has been no measurement of the impact on the use of staff time since the implementation of the new technologies.

The main benefits of implementation have been the provision of additional retrieval tools to support students' information searching and gathering. Given the number of students, it is assumed that they are greater users of the portal technology than university staff, but there have been no surveys to support this assumption. The aims of having the additional technology have been met, that is, the provision of the functionality to increase search and linking facilities.

3.10 Continuing support from the supplier

Innovative provided excellent technical support for implementation, but Luton have been unable to progress the functionality of the technology as quickly as they would have liked. Any upgrades will be managed as part of an upgrade to the library management system. Support from the supplier is considered to be more than adequate to meet this.

⁵ See <http://www.projectcounter.org/> for further information (accessed 1/12/04)

3.11 Changes in staff roles

There have been no changes in staff roles. The Library Systems Manager is responsible for managing automatic downloads from the supplier.

3.12 The future of the portal

Plans to expand the services available at Luton include the introduction of 'My Millennium' which would allow the user limited personalisation of search results, that is, to store search profiles. The library is currently considering user requirements and solutions to those requirements. When the library undertakes a major change to its web site and services, it may consider introducing personalisation as part of the re-branding of its services. Other considerations are the development of LDAP and further integration with University systems, including the Novell ifolder service⁶.

MAP does not currently provide automatic integration of resources and groupings which link to an individual's study aims.

3.13 Advice to other libraries

The library at the University of Luton can offer the following advice to other libraries:

- Developing good library services is about identifying the needs of the customer and a portal product should only be considered if it meets those needs
- The customer will not differentiate between a portal and other means of service delivery, so the delivery of information resources should be the first consideration
- Don't skimp on the planning process
- Establish a timescale and what resources will be required in implementation

⁶ A product offered by Novell to allow remote access and management of files. See <http://www.novell.com/products>

4. University of Exeter – Millennium Access Plus

4.1 Introduction

The library at the University of Exeter has implemented Innovative Interfaces Inc.'s portal Millennium Access Plus (MAP) and has recently upgraded to the latest version, Millennium Silver⁷. There is no institutional portal at the University.

4.2 Choosing a portal

All senior library staff were consulted in the decision making processes of adopting a library portal and in choosing the product, but not staff in the wider institution.

MAP was chosen primarily because of ease of integration with the existing library management system, which is also Millennium, and was regarded as providing integration of existing services rather than a new product. Having worked previously with Innovative, the library knew of their expertise and their proven record of support and development and therefore did not go out to tender for other products. Prior to purchase the library undertook a review of the literature on portals, consulted colleagues on other MAP sites and had a demonstration of the product by Innovative.

Exeter's main aims in implementing a portal were to extend the library's services to all groups in the University and to facilitate access to electronic resources, especially in view of the University's aims to extend its international research profile. It was intended that staff and students would access those resources more easily through the improved management system offered by a portal.

The budget made available for the portal was adequate and covered the full implementation and on-going development. There were no unforeseen costs.

4.3 Pre-implementation

Prior to implementation the library's main concerns were: the time it would take to develop the portal, staff and user training and to raise users' awareness of the new technology. These concerns were mostly unfounded, except that library staff 'ownership' of the portal is still an issue. As MAP is relatively simple and quick to set up and intuitive to use, less time than expected was spent on development and training.

Innovative visited the library to demonstrate the system and representatives pre-loaded software and set defaults. They also provided online documentation and responded promptly to email enquiries. They offer an online 'FAQ' and a mailing list for purchasers. Online WebEX⁸ training sessions were given on these areas of support as well as 'set-up' considerations. As an early adopter, the library would have welcomed more information on the full capability of the portal, and this has been addressed by the development of an online tutorial for library staff by the supplier.

⁷ See <http://www.iii.com> for further information (accessed 10/9/04)

⁸ WebEX is an online conferencing system which facilitates training from Innovative

4.4 Implementation

Following the purchase of the product, implementation took just three weeks, which was a shorter period than expected. This may be due in part to Exeter adopting a 'one person' approach to implementing the portal, although with reference to other colleagues. This may have cut down on the time period otherwise required or experienced elsewhere. The decision was taken not to pilot the portal, as the library was satisfied with the testing of the portal before it went 'live'. There was no special 'launch date'; the service went 'live' as soon as it was ready. At this point a seminar was held for all library staff, followed by a more formal training session.

4.5 Functionality and content

The portal integrates with the Online Public Access Catalogue (OPAC) and offers a single point of access to electronic journals and online databases. Functions include cross-searching, customisation, de-duplication of search results and refining of search results, but not, at this stage, personalisation or email alerts.

There were some initial issues with the use of MetaFind in the profiling of the portal, but these were identified and resolved by Innovative. There has also been a problem in WebBridge with dynamic URLs used by one of the library's journal agents, but this will be put right by the agent.

As with many institutions, Exeter is working towards an Athens Single Sign On⁹. Access to the library portal is through the 'My Millennium' login system and users are required to sign in using their library ID and PIN numbers. Data searching software known as Lightweight Directory Access Protocol (LDAP), which provides a set of protocols for accessing information directories, will soon be installed on the library server to allow access using the campus-standard IT username and password. The web access management (WAM) system in Millennium Access Plus also acts as a proxy server allowing direct access to databases for off-campus users, although there are still a few publishers who require further authentication to access resources.

Off-campus users can access resources using the standard campus dial-up, Virtual Private Network (VPN) or alternatively access the portal using their normal sign on procedure, facilitated by the WAM authentication.

4.6 User interface

The university library at Exeter view their portal as part of the online services available to users and have therefore decided not to give the portal a separate name as some libraries have chosen to do. There was no requirement from the supplier to acknowledge the product on the user interface. The only foreseeable changes to the interface may be to refine the MetaFind 'advance search' menu if the number of resources is extended beyond one screen. This will be possible using standard HTML.

⁹See http://www.athensams.net/development/devolved_authentication/ for an explanation of SSO (accessed 13/09/04)

4.7 Staff skills and training

The University of Exeter library did not find that library staff needed any specific skills to implement the portal, just a willingness to learn about its capabilities. Ongoing development and maintenance requires an eye for detail and the ability to persevere with any problems.

The Deputy Librarian held two training sessions for library staff, one directed at senior staff and the other for all other library staff; 50 in total. Follow-up 'master classes' are planned to celebrate the first year of the portal and to answer any outstanding questions or concerns from staff.

4.8 Promotion and user education

The original budget for the portal did not allow for publicity or user education sessions and the supplier did not provide any publicity material, but this has not caused problems with promotion, as this has been largely through existing media, such as the library newsletter and the second edition of the Library's online services booklet. There are other channels available for promotion within the University, such as, web page banners, group email lists, senior management seminars and other open meetings and all of these are used to market the portal.

The library has adopted a serendipitous approach to user education. There are no formal user education sessions but the usage of the portal has shown that staff and students throughout the university are able to use the resource without difficulty. There are no plans to develop an online tutorial for users.

4.9 Impact measurement and statistics

Database usage figures have been collected post-implementation and are being used to check usage patterns and success rates for access, with a view to refining links and identifying further resources as appropriate. Statistics are collected weekly by WebBridge and monthly by the supplier through MetaFind.

WebBridge is a linking facility with which the University of Exeter library has created a link to a 'pop up' panel which in turn offers a list of reliable full text sources, followed by the option to link to the full text of the article or resource. The chart below (*fig. 1*) shows that in the first three months of implementation in 2003 there were 1,802 links via WebBridge to the 'pop up' panel with 616 (34%) going on to access the full text source. In the same three month period for 2004 there were 12,803 initial links with 5,739 (44%) accessing full text. The access to full text increased by 5,123 or 832%.

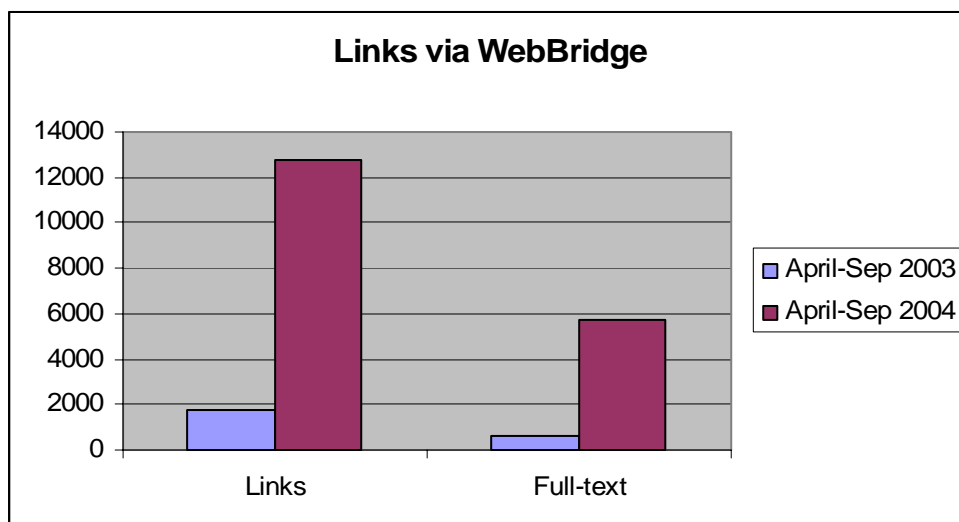


Figure 1

Databases can also continue to be accessed via the library OPAC. As the chart in *figure 2* shows, there were 5691 primary links with 621 (11%) going on to access full text for the three month period in 2003 and 31,451 links with 1,464 (5%) accessing full text in 2004. The increase of access to full text via the OPAC increased by 843 or 136%.

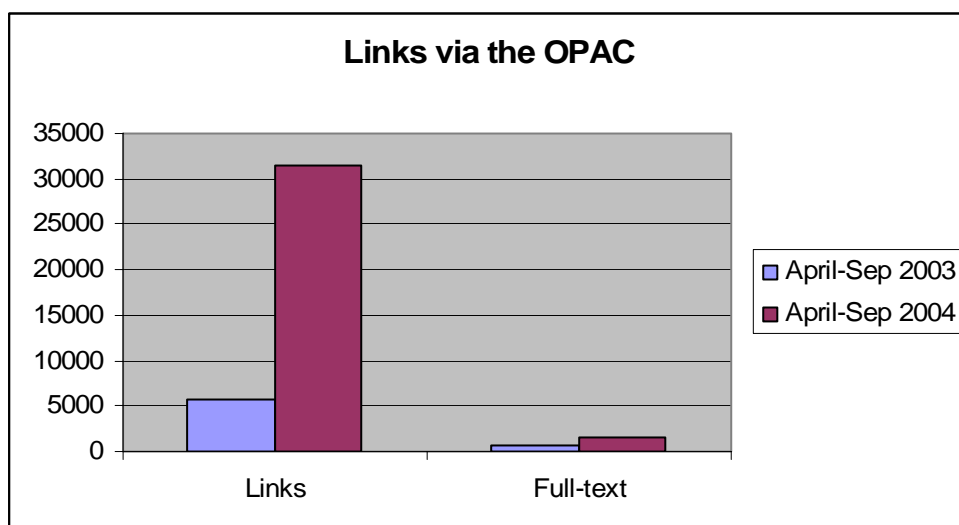


Figure 2

Both sets of figures suggest that those who search via WebBridge may have a greater intention of accessing full text when they begin their search (44.8%). Searchers via the OPAC make fewer links to full text (5%) and this decreased in 2004, indicating that this type of search is for less detailed or exploratory information only. However, the increase of links to full text using WebBridge from both origin databases and the OPAC may be an indication that the user now has a greater awareness of the databases available, through their promotion within the portal.

The main users of the portal since 1st January 2004 have been recorded as follows: staff 47%, postgraduates 22% (17% taught, 5% research) and 25% undergraduates.

The amount of staff time taken to implement the portal was approximated beforehand, but this has been measured in an empirical rather than a scientific way.

The main benefits of the portal are seen as facilitating access to information, largely through a single access point, although there are still outstanding difficulties with access from one e-journal agent. Development to increase the availability of resources continues. The main aims of the portal are seen to have been met in the initial implementation, although the portal is a continually developing facility as more resources are added or require amendment.

4.10 Continuing support from the supplier

Exeter is pleased with the continuing support they receive from Innovative, who deliver help and expertise as required. A mailing list provides additional support to libraries, covering separately WebBridge and MetaFind. The supplier works with its clients to continue the ongoing development of the portal programme.

Upgrades to MAP are incorporated with general upgrades to the Millennium library management system. They are managed at least once a year by the supplier who provides full online documentation.

4.11 Changes in staff roles

There have been no changes in the roles of library staff since the implementation of the portal although it has become easier to explain to users how to locate full text. The content of the portal is managed by the Deputy Librarian, who responds to staff comments, developments from e-resource vendors and database suppliers, and to user trends.

4.12 The future of the portal

The library intends to follow the Millennium development path and implement changes as appropriate. There are a few things which the current product does not provide which the library would like to see in future developments, for example, easier access to MetaFind usage statistics. A knowledgebase for local subscriptions provided via 'CrossRef' is not available and Innovative are developing a means to resolve this by December 2004.

4.13 Advice to other libraries

The University of Exeter library offer the following advice to other libraries considering the purchase of a portal:

- It will not be cheap in terms of purchase cost or development time
- Staff skills required will vary according to the product
- The timescale from purchase to implementation will vary according to the product but do not be afraid to make it 'live'
- Piloting the portal may not be necessary but effective checking prior to implementation will be, in order to smooth any 'glitches' and to ensure users will have confidence in the product

- It is important to have some knowledge of set-up issues and reasons why some resources are unreliable
- Check with the portal supplier that e-resources will be profiled within a reasonable timescale
- The user interface should be made as intuitive as possible to ensure a minimum of user education
- A portal is an important part of an e-resource management strategy.

5. Information on Endeavor's ENCompass

Endeavor Information Systems Inc. has developed a product which offers the facility to manage and access digital collections. For a full explanation of the product, further information is available on Endeavor's web site: <http://www.endinfosys.com>. The brief summary below is taken from the literature available from Endeavor and summarises the main functionality.

ENCompass offers a solution for searching across multiple data types and databases and interoperability with campus systems. There are three main applications: ENCompass for Resource Access, ENCompass for Digital Collections and LinkFinder*Plus*.

ENCompass for Resource Access (ERA) enables consolidated searching of the library's resources and licensed databases, together with the Internet, through federated searching. It allows searching across multiple protocols and allows users to save their search results and history. XML-based architecture allows ease of integration of resources.

ENCompass for Digital Collections allows organisation of collections for the most effective service delivery. It offers complete metadata processing, creating, importing and storing of metadata about digital objects.

LinkFinder*Plus* allows links to full text resources, and as with similar technology in other products, maximises the usage of electronic databases.

ENCompass integrates with learning management systems such as WebCT and Blackboard to deliver access to materials in the library OPAC. Tutors can tailor searches to particular courses so that students access the relevant resources.

6. Open University: Endeavor ENCompass

6.1 Introduction

The Open University library has purchased the Endeavor library portal ENCompass, Version 3.0.

6.2 Choosing a portal

The Open University developed a business case for the portal based on user needs and asset management. In 2003 three portal products were evaluated: ZPortal, MetaLib and ENCompass, with the library choosing ENCompass. The product was chosen for a number of reasons:

- ENCompass has a simple uncluttered interface, important when considering the needs of distance learners
- The product has the potential to be a ‘middleware’ platform for delivering library e-resources and course content into learning environments and portals through its XML architecture and the public APIs which ensure that the system can be integrated into local applications
- It offers users a seamless search interface to all online areas of the University’s learning environment, including library resources and in the future to learning object repositories, when they become available
- At the time of the evaluation, ENCompass was the only product which offered a digital collections module for managing access to local repositories
- The Library has an existing working partnership with the supplier
- Most competitive in terms of price if annual maintenance fees are taken into account

A small team of three library staff, consisting of the Electronic Services Development Manager, the IT Projects Officer, the Head of Information Management and Development Group (also the E-resources Manager) were instrumental in choosing the portal. The main reason for purchasing a library portal was to provide users with a seamless search interface across a wide range of electronic databases. In implementing a portal the Library felt that they were offering the user an improved service, the facility to search across a variety of resources without the need to know the different ways to access and search individual databases.

Various criteria were employed in choosing the portal including functionality, the cost and licensing model, the supplier and their reputation and how the portal complied with the Open University’s e-learning strategy; embedding library resources and information literacy activities into courses. The project team grouped the criteria and associated features of the portal, weighted the criteria and scored each of the systems on a scale of 1 to 5 for each criterion. The highest total score presented the team with the preferred product.

The specific aims in having a library portal, as presented in the business case, are:

- Users have a seamless search interface across a wide range of databases and collections

- The provision of integrated access to local collections, for example, the library catalogue, local digital collections, external commercial content, learning object repositories and abstracting and indexing databases
- Linking via OpenURL from citations in bibliographic databases to full text
- To bridge the gap between the e-learning environment and library systems

The portal is aimed at providing Open University students with an academic search facility which is easy to use and to enable researchers to search literature for dissertations. Course teams will have the means to find resources and full text to embed in online course resource lists, with the facility to create online course activities using a pre-defined search on selected topics.

As a 'premium package customer', the Open University Library was entitled to Z39.50 configurations, XML gateways and new http connectors. For links to databases which are not already in the Endeavor knowledgebase, the supplier facilitates connections through http connectors, to a maximum of a further 15 databases, and then charges for any others required. Endeavor will add these new connectors to the knowledgebase six months later to share with other sites, but in reality this can take longer. This will mean that the Endeavor community are kept waiting for connectors if they are not prepared to pay for them immediately. Endeavor UK Office are exploring with their Head Office whether a collection of prioritised connectors for the European market can be made available at no charge.

The budget allocated for the portal allowed for purchase and full implementation. There have been funds allocated for ongoing software maintenance but not for additional connectors and this money may have to be found from elsewhere. A further unforeseen cost is the high cost of the Athens integration module.

6.3 Pre-implementation

As an early adopter, the Open University Library had to configure the Z39.50 databases in-house. Endeavor now provide their customers with a knowledgebase of Z39.50 configured databases. Many of the resources the Open University wished to access were non-Z39.50 databases with different search interfaces, which entailed the building of new connectors to enable their inclusion in the portal.

Endeavor provided two days training on the two modules, ERA and ENCompass Digital Objects, and on LinkFinderPlus. The training was very compressed and provided little time for 'hands on' practice. However, the Open University found the Endeavor project manager helpful, including advice on the configuration and testing of the databases. Project management included onsite training and implementation, regular conference calls, one site visit by the project manager, a direct helpdesk link to the project manager and a letter template for contacting publishers about protocols. Members of the library staff were satisfied with the level of support provided.

6.4 Implementation

The original project plan allowed a timescale of six months from purchase of the portal to the 'live' date. This has since been amended to 12 months because of the delay with integration of the Open University's authentication system, which has been redeveloped as a web service and is

now undergoing acceptance testing. The Open University Library has therefore taken the decision to wait for the next release of ENCompass, version 3.5, before going 'live'. This will allow the Open University to have the benefit of the improved interface in the later version, which they can modify and test for accessibility. Sign on procedure, personalisation and customisation functionality will also be tested before the planned 'live' date in December 2004. The same team who chose the portal have been directing the implementation. The portal has been piloted for the purposes of user testing with Open University staff and it is as a result of their feedback, that modifications to the user interface to enhance accessibility will be made.

Once the institutional authentication is in place, a 'soft' launch is planned to off-campus users in December 2004. Publishers have been slow to respond to requests concerning OpenURL which will mean that not all databases will be linked through Endeavor's LinkFinderPlus.

6.5 Functionality and content

There is no institutional portal at the Open University; there are separate web sites for courses, student information, tutor information and the library. The library management system, Voyager, is produced by the same supplier as the portal. The ENCompass digital collections module has resulted in ease of integration with local repositories including image collections and the Open University's collection of past examination papers. A new Open University initiative will investigate the integration of the ENCompass portal and library resources with the VLE.

All databases, to which the Open University subscribes, have been placed within the portal. Functionality includes cross-searching, personalisation (saved searches, saved queries), customisation ('mycollection'), de-duplication (available in version 3.5), refining of search results, the sending of results by email, the notification of search alerts by email and the portal allows a single point of entry to databases. The portal search interface has the library web site headers in order to provide users with the same look and feel as the library web site. Resources, which cannot be cross-searched through the portal, are nevertheless included in the list of databases in order to alert users to their existence. As there is no easy way to configure non-cross-searchable databases in the portal, the library have modified the XSL interface to include web links to these resources. The next version of ENCompass, version 3.5, allows configuration of the non-cross-searchable resources in the system administration.

It is intended that library users will access the portal via the Open University authentication system and Athens Devolved Authentication, when testing of this has been completed by the library. Sign on will be by user name and password and will be a single sign on if Athens DA works successfully. Off campus access should be feasible through the same means.

6.6 User interface

The library portal at the Open University has been named *ENCompass Multiple Database Search*, although the supplier did not require their product to be acknowledged on the interface. Improvements that the Open University Library would make to the user interface include changing the search buttons to tabs, changing the *Expand* button on the basic search screen, increasing the maximum number of search results per Z39.50 database to 100 hits, adding an *About ENCompass* button and increasing accessibility for disabled users.

6.7 Staff skills and training

Library staff already had the necessary skills to implement the portal; knowledge of XML and Z39.50, although they experienced a steep learning curve during the project.

Once the portal is fully operational, the Open University Library plans to offer 'taster' sessions to academic staff. These sessions will be run by the Information Literacy Manager and the subject information specialists.

6.8 Promotion and user education

The unique nature of the Open University means that the majority of users are distance learners, and it is to these users that promotion will be targeted. Open University students have little time to learn new systems so the Library's aim is to make the search screens as clear and uncluttered as possible. Focus will be on the development of online help and a tutorial is planned. User education for on-campus users will be available within the normal user education sessions.

All Open University students and staff will be notified of the portal via their electronic mailbox and a 'soft launch' is planned on the web site. Ongoing developments will be communicated by email and consideration will be given as to how this will be managed so that students are not overloaded with emails. User education has quite an impact on library staff time.

6.9 Impact measurement and statistics

The Open University Library set up performance metrics before implementation of the portal. Database usage figures can be collected in-house and once the system is 'live' these figures will be included in the monthly information resources business report to management. These will be analysed to identify the effectiveness of the service and the impact of the portal on the use of information resources. Currently, monthly business reports capture all performance indicators for information resources and library web services, so a comparative study can be made of the statistics pre and post-implementation. The Open University Library is willing to share any impact measurement statistics they collect with other libraries.

The impact on staff time was approximated before implementation and has been recorded since on a monthly basis. It was estimated that 100 days work would be required, covered by two people working part-time for 12 months. The time actually spent has been 120 days, and due to the delay in launching the portal, it is estimated that a further 50 days will be needed over the next three months.

The main benefit of having a portal is perceived to be the delivery of electronic resources through a single point of access. The requirement for staff and students to learn about access and search methodology for each individual resource is eliminated and the portal provides a one-stop search facility for information across a range of resources.

6.10 Continuing support from the supplier

Endeavor is considered by the Open University to have provided sufficient support throughout implementation and continues to offer support to implement upgrades. The current portal

software will be upgraded and this will be managed by the supplier who has remote access to the library server. Following the upgrade all changes to the user interface will be finalised.

6.11 Changes in staff roles

Given that the portal has not yet been officially launched, it is too soon to say whether or not there have been any changes in the roles of staff. It is expected that one of the team of subject information specialists will be responsible for managing the content of the portal.

6.12 The future of the portal

Immediate plans are for the launch of the portal and subsequent upgrade. The Open University Library plans to integrate the portal with the new VLE, which will include resource lists, pre-defined searches for online course activities and searching by topic. They also want to add in more local repositories, such as archives, TV transcripts and audio visual materials.

The portal does not currently provide the display of search results in order of relevance and the library would like this facility to be available. Endeavor are addressing this, but this is not expected to be available until the next release, after version 3.5.

6.13 Advice to other libraries

The Open University Library advises those libraries which may be considering the purchase of a portal to look at the databases to which they subscribe and to see how many of those allow for Z39.50 access. If there are no Z39.50 protocols and the database is an important resource, it may be advisable to check with the supplier to see if they offer a range of XML gateways, such as ScienceDirect, Engineering Village and PubMed. These gateways will provide a reliable, robust technique for searching content. If these are not available the supplier may have developed an http connector for the required database, but these are not as reliable, usually because the publisher will change the search interface from time to time.

Further advice would be to manage user expectations of the performance of the portal. It is advisable that users be warned that it is not possible to cross search all of the databases, that they must select an appropriate subject folder of relevant databases and that the search results will not be delivered as fast as those in Google.

7. Information on Ex Libris' MetaLib

MetaLib is the Ex Libris library portal which enables institutions to optimise usage of their electronic resources. The information below has been taken from literature about the product as well as from the Ex Libris web site¹⁰.

The MetaLib library portal can be integrated into institutional portals and other e-learning systems, providing seamless access for library users.

SFX is technology developed by Ex Libris to facilitate linking to a variety of electronic resources. It is an embedded OpenURL compliant link server, allowing access to services such as the full text of journal articles, details of print holdings, onward navigation to additional information in another repository, such as a citation database, and the generation of inter-library loans or document delivery requests. SFX services are available from records retrieved through MetaLib or through the interface of other OpenURL enabled resources.

MetaSearch allows simple or advanced searching across a variety of protocol and diverse resources, via alphabetical lists, subject categories and other locator functions. The search results are presented to the user after de-duplication and can be sorted or merged if required. MetaLib offers personalised research support so that searches can be saved and email alerts set up by the user.

¹⁰ <http://www.exlibrisgroup.com>

8. Royal Holloway, University of London

8.1 Introduction

The library at Royal Holloway, University of London has had the Ex Libris library portal, MetaLib, since September 2003. They upgraded to version 3.11 in September 2004.

8.2 Choosing a portal

The library senior management team were involved in the choice of portal. Although the library looked at the specifications of other products, it was decided to buy MetaLib as the library already had Ex Libris products, Aleph (the library management system) and SFX (linking software). This, together with their existing good relationship with the supplier, were the main criteria for their choice. Prior to purchase, other MetaLib sites were consulted for their views on the portal.

Royal Holloway also knew that Ex Libris is committed to pursuing the development of standards and best practice in the areas of interoperability and linking technology, and that they have a history of innovative development. The main reason for choosing the product was not price but in fact the portal was competitively priced and offered value for money.

The motivation to implement a portal was to rationalise the organisation of electronic resources, databases, web pages and e-journals. Prior to the portal, any updating of electronic records required knowledge of HTML, and this limited the number of staff eligible to carry out updates to those who had the necessary skills. The introduction of a portal has enabled records to be updated as and when required by a wider range of staff.

At the time of purchase of MetaLib the institutional portal was in the planning stages and the library's e-strategy manager was on the planning committee. A separate library portal was implemented because different functionality is required from that of the institutional portal. Whereas this is a gateway to the institution, the role of the library portal is to specifically provide access to electronic resources. The portals are seen as complementary but offering different services.

The budget allocated for the portal was adequate for purchase and implementation and there were no unforeseen costs. To ensure that implementation was carried out smoothly, the responsibility for the management of e-resources was added to the work of one of the subject librarians.

8.3 Pre-implementation

Investment in the portal was delayed slightly because of uncertainty about the audience to whom the portal would appeal. Royal Holloway were aware that there had been concerns in other academic libraries whether a portal would be used mostly as an access point to resources for undergraduates, or as a powerful search tool for researchers, and this proved to be a point of discussion for the project team. Consultation with other sites reassured the library that a portal was a worthwhile investment and that the provision of research resources was not 'dumbed down'. Since implementation, the library has found that users are accessing the portal and finding information appropriate to their requirements.

The supplier provided training and technical support to the core project team. Training sessions were shared with another MetaLib site, the University of Westminster, and this co-operation offered a useful forum for discussion.

8.4 Implementation

A small project team of three staff took responsibility for implementing the portal. A project plan was put in place covering timescale and target dates. From purchase to 'going live' took ten months which was slightly longer than expected; this was due to a short delay in getting some of the hardware ready. It was decided not to carry out a full pilot but focus groups were run with library staff and students in order to test the portal functionality. The portal was launched shortly after the 'live' date in September 2003.

8.5 Functionality and content

MetaLib integrates with the library management system, including the library catalogue but, as yet, not with the institutional portal which is currently in the early stages of development. The e-strategy co-ordinator has a broad remit to look at online web resource provision in the library and across the institution, so any integration will be carried out following consultation with all concerned parties. The library is working with academic staff to decide what the VLE can offer in the future and how this can be integrated with the portal.

The portal offers functionality such as cross-searching, personalisation, customisation, de-duplication, refining of search results, email alerts, a single point of entry to databases and links to web resources, such as e-journals and full-text. The portal provides the only access to the library's databases and e-resources and is accessible from the library home page. There were no specific problems with the functionality of the portal itself, but there was a challenge in the explanation of the cross-searching facility to some users as it provided a level of complexity they had not encountered previously.

Users currently access the portal by signing on with their library bar code and PIN. Version 3.11 of MetaLib allows user authentication against the institution so that there is no necessity for the user to log on with a separate Athens password. Off-site users are treated as a 'guest' user until they access databases and are then required to sign on. Users may experience some limitation to accessing licensed databases from off campus.

8.6 User interface

The library at Royal Holloway was asked to acknowledge the MetaLib brand on the user interface, but the portal has not been given any specific name, just MetaLib. The interviewee was aware that some libraries had discussed the option of not acknowledging the brand name with the supplier. Ex Libris are continually looking at improving their product and the interviewee had participated in an international focus group to consult on specification for Version 3.11. He acknowledged that there may still be scope for improvements.

8.7 Staff skills and training

Implementation of the portal did not require any specific skills; the system was set up by the supplier. Staff learned about the portal and its functionality during training and as the project developed but this proved to be a steep learning curve for some. The functionality of the portal also requires some knowledge about the different types of protocol, also about how the cross-searching facility worked, in order to explain this aspect to library users. Training was offered in-house to all library staff as the portal replaced previous access points to e-resources. Subject librarians then offered training to academic staff in the university as required. There has also been discussion about the relevance of offering training to administration staff, but this has not yet taken place.

Training on the portal is now included in the library training programme.

8.8 Promotion and user education

Promotional material for the portal was developed in-house, with an evening 'launch' event for academic staff. Although the library developed a formal plan for promotion of the portal, there was no specific allocation of budget for this.

Information about the portal is included in general library induction training and further user education sessions are offered to students on a 'drop-in' basis and are normally one-to-one. The portal is seen as self-explanatory and the majority of users are able to access the information they require without further help from library staff. An online tutorial for the portal is currently being developed.

8.9 Impact measurement and statistics

Although there were no performance metrics set up before the implementation of the portal, the library makes use of the database usage figures which are collected in-house from MetaLib and also from the supplier. Early analysis of one database has shown an increase of usage, but whether this is due to it being a default database for searching within MetaLib is unclear. The library are currently deciding how to interpret any statistical findings as it is not immediately apparent whether an increase in searches represents an equivalent rise in the useful results found by users.

Usability statistics have been studied to understand how users of the portal are searching for information. It became apparent in a focus group that not all users were aware of many of the resources available to them and the portal has improved that awareness.

The impact on staff time has not been measured in any way; it is seen as part of the on-going development of library resources.

The main benefits of having the portal are the rationalisation of resources through a single point of access. The ability to cross-search all resources is seen as a major advantage, as well as the immediacy of access to those resources. It is perceived that the main aims of the implementation of a portal have been met in that a single point of access has been achieved. Library staff members are now skilled to update the databases and their confidence in using the portal continues to grow.

8.10 Continuing support from the supplier

Ex Libris offer a continual package of support, including the implementation of upgrades. The most recent upgrade to Version 3.11 has been carried out by the supplier who managed a parallel installation of the portal software. This can also be done by library systems staff and Ex Libris are developing a 'toolkit' to facilitate this for libraries in the future. A quarterly update to the MetaLib KnowledgeBase is provided by the supplier.

There is an active user community for MetaLib and support is offered via a users' mailing list. Ex Libris currently offer email support but have indicated that they intend to move to a more structured customer support system.

8.11 Changes in staff roles

There have been no major changes in staff roles, more a change in how e-resources are managed. The extension of the role of the e-resources library manager to include the overall management of all electronic strategy has given the postholder responsibility for the library portal as well as allowing a broader remit to oversee the e-strategy of the University. Individual subject librarians have responsibility for adding or updating resources, but any removal of resources is done after consultation with colleagues.

8.12 The future of the portal

The recent upgrade to Version 3.11 of MetaLib will address some of the problems encountered with the previous version. At Royal Holloway, there will continue to be a keen interest in the development of supplier standards and best practice and an on-going discussion about the integration of the portal with other systems, especially the VLE. It will be necessary to consider the level of integration and how this will impact on users.

There is currently a provision on MetaLib to save a list of references to a facility called an 'e-shelf'. It would be desirable to be able to offer academic staff the added service of being able to publish this so that they can add this list into student reading lists, and Ex Libris have been asked about this.

8.13 Advice to other libraries

Royal Holloway, University of London offer the following advice to other libraries considering the purchase of a portal:

- Consider usability
- Test before going 'live'
- Don't underestimate the time involved. Allow at least 6 months as it is a big task to implement a portal and time should be allowed to discuss the concepts
- Be prepared to explain new concepts to users

- A small team approach is preferable. Following group discussion, action needs to follow and this is best done by a small team

Royal Holloway is always happy to share their experiences with other libraries considering a portal and to host site visits.

9. Nottingham Trent University - MetaLib

9.1 Introduction

Nottingham Trent University Library is currently implementing MetaLib, version 3.11. Although the linking technology, SFX, has been made available to users, MetaLib will not be fully operational until January 2005.

9.2 Choosing a portal

The library has preferred not to define the project as implementing a 'portal', but rather as an opportunity to exploit new technologies, such as OpenURL and federated searching, to improve services to users. This was the main purpose behind the decision to purchase a 'portal' product.

A working project group was set up to implement MetaLib. This group consisted of members of the senior management library team, E-services, the Information team and the University's Purchasing Department. Other University staff were consulted informally through members of this group.

A detailed tender document was sent out to selected providers, inviting submissions. Two suppliers were invited to deliver presentations to groups of library staff and then to discuss details of implementation with the smaller project group. The presentation sessions included an opportunity for library staff to test a number of pre-set searches, in order to compile a comparative assessment of relative meta-searching and result sorting protocols. Following the sessions, staff were encouraged to submit comments on MetaLib.

MetaLib was chosen because it was the best match with the library's functional and business requirements. Criteria such as the reputation of the supplier, after-sale support, interoperability with other library systems and value for money, were all important in making the final choice.

The portal is intended to meet the differing needs of undergraduates, postgraduates, academic teaching staff and researchers. The portal offers functionality at different levels of complexity and can support the tailoring of services to meet the requirements of different sections of the Libraries and Learning Resources varied client groups.

The budget allocated for the portal covered implementation in full. There were no unforeseen costs.

9.3 Pre-implementation

The library at Nottingham Trent University had no concerns prior to implementation. Site visits were made by key implementation staff from Ex Libris, who also facilitated access to extensive online technical documentation, data-gathering templates and project timetabling, and guidelines for the implementation group. Support was provided to clarify a range of detailed implementation and service issues identified by the project group.

Staff from the project group, and others concerned with the implementation process attended two three-day training sessions provided by Ex Libris; the first gave information about SFX and the second about MetaLib. The training sessions combined presentations and 'question and answer'

sessions with practical 'hands-on' sessions, providing opportunities for staff to look at the cataloguing, configuring and activation of resources and the verification of users. Technical documentation was provided and the presentations were available on disc.

9.4 Implementation

The implementation of MetaLib was managed by a team which brought together e-Services and e-Systems staff, also representatives from the library's Information Teams, to oversee the implementation process, agree a timetable, manage feedback and to decide on policy. The timescale from purchase of MetaLib to implementation was six months, as expected. Technical aspects have been managed by a smaller number of staff from e-Services and e-Systems.

Nottingham Trent launched SFX at the beginning of the Autumn term 2004 with a core group of enabled 'sources' and 'targets' which have been greatly added to in the weeks since the launch. The intention is to launch the MetaLib environment early in 2005 but as yet a date has not been set. A senior member of the implementation team left part way through the process and this may delay the activation of all services at the launch date.

9.5 Functionality and content

The MetaLib portal has to integrate with the existing library management system, supplied by GEAC, also the library catalogue and the Virtual Learning Platform, which is an in-house Virtual Learning Environment, based on the Microsoft Exchange platform.

The portal offers a range of functionality including cross-searching of databases, personalisation and customisation, refining of search results, email alerts, a single point of entry to databases and web links to the institutional home page and library catalogue. De-duplication of search results is currently in development. As the implementation of MetaLib is still in its infancy at Nottingham Trent, the functionality has not yet been fully tested. The intention is to place all the current subscription databases within the portal.

Authorised library users will be able to sign in to MetaLib using their university username and password. There will also be the option of 'guest' access, but this will have limited access to resources. Off-site access is also available as a 'guest' user. There are still some database providers who require Athens authentication, and in addition there are certain materials which may be restricted by the Internet Provider, but Nottingham Trent aspire to providing a single sign-on for users.

9.6 User interface

Both SFX and MetaLib require the inclusion of a commercial copyright credit on the user interface. The 'portal', or the set of new technologies, has been named 'e-search'. The library may decide to customise the appearance and layout of MetaLib, also to change the name of field descriptors and look at some of the optional user functionality.

9.7 Staff skills and training

In implementing MetaLib, Nottingham Trent University library found that staff required detailed technical hardware skills to ensure the effective implementation of the server and the

establishment of back-up systems for the KnowledgeBase, and to enable integration with LDAP. Equally detailed awareness of existing e-subscriptions web delivery was required to ensure the effective enabling of resources in the KnowledgeBase.

Ex Libris provided essential training prior to implementation and further 'self teaching' in the areas of hardware skills and resource delivery, through the provision of detailed documentation. Maintenance and upgrading has had to become a part of the installation and implementation process, not left until the first stage of the implementation is complete. Many existing skills were extended and revised, but it has still been a steep learning curve for those staff members involved.

Training for other library staff on the use of MetaLib will be offered nearer the launch date in 2005.

9.8 Promotion and user education

There has been no specific budget allocation for promotion and user education which will be built into established programmes. Information about MetaLib will be included in future induction sessions, following the launch of the service.

9.9 Impact measurement and statistics

Due to the early stage of development of the portal at Nottingham Trent University library there has not been any measurement of its impact on staff time or usage of databases.

9.10 Continuing support from the supplier

Ex Libris have provided extensive support to date with the implementation of SFX and with the initial work on MetaLib. The US-based help desk provides prompt and detailed email support, and the UK-based Project Manager for Ex Libris has been a particularly helpful first point of contact for assistance with technical questions. The online documentation portal is frequently updated and the company regularly posts responses to the SFX and MetaLib user group email lists.

It is intended that upgrades to the KnowledgeBase are managed in-house at Nottingham Trent by enabling automated routines. Online support and written documentation are provided to support this. Members of the current implementation project group will manage upgrades to the MetaLib technology.

9.11 Changes in staff roles

There have been no major changes in the roles of library staff following implementation. The responsibility for management of the content of the portal is currently under review.

9.12 The future of the portal

The library at Nottingham Trent will be looking at how the portal can integrate with the planned new library management system. This is currently out to tender and it is intended that this will be

implemented in the summer of 2005. The project group would like to see improved integration with local authentication systems.

9.13 Advice to other libraries

Due to the relative 'newness' of the portal, the staff at Nottingham Trent do not have any advice to offer at the present time, but would be willing to respond to any enquiries.

10. Conclusions and Recommendations

These case studies of library portals in five higher education libraries have illustrated that the adoption of portal technology is still relatively new. This may be due to budget restrictions or to libraries deciding to follow another route to facilitating access to electronic resources. The libraries in this report have made the decision to purchase a commercial product primarily to improve their service to library users. They have willingly shared their experiences and knowledge of implementing a portal to help other libraries who may be considering the purchase of such a product.

Management of electronic resources

The main aim of these libraries in implementing a portal has been to manage electronic resources more effectively, at a time when these are rapidly increasing. A portal is seen as an investment in the overall development of electronic services to users. Information is becoming more accessible via the internet and library users have therefore come to expect instant access to learning materials and, in particular to journal articles. In implementing OpenURL portal technology an academic library can increasingly facilitate access to the full text of the article, as well as offering sophisticated search options over a wider range of databases.

The five libraries in these case studies have not promoted the portal to any particular group but aim to improve their service to all users. It has been the aim of all libraries to adopt a user centred approach, providing a single search interface, and offering seamless access to resources.

Choice of portal and pre-implementation

The information provided by portal suppliers enables libraries to make an informed choice when purchasing a portal. Libraries who have already implemented the technology are usually willing to share their experiences with libraries considering implementation, and to arrange a site visit if required.

The choice will be dependent on any specific requirements the library may have, for example, one of the reasons the Open University library chose ENCompass was because it has an uncluttered user interface, important when delivering a service to distance learners. Ex Libris' MetaLib is known to be a mature product in the field, but libraries are aware that integration of the portal with other systems is a consideration, and may therefore wish to buy from a supplier that they know through the supply of their library management system.

Early adopters experienced some technical difficulties, as well as requiring changes to the way in which the portal delivered services. Portal suppliers have been eager to work with libraries to develop and improve their products and many suggestions made by library staff have now been incorporated into later versions. This co-operation has resulted in improved functionality in the later versions of portal products.

Implementation

Four of the libraries have chosen to implement the portal with a small project team, with consultation of other library and university staff. One library had one person who had sole responsibility for the implementation, but has admitted that there are outstanding concerns over the library staff's 'ownership' of the portal. It is therefore important to strike a balance between

sufficient consultation of staff members and ensuring that the team is not too large to delay the implementation process.

Functionality and content

Portal products have similar functionality, but there may be differences in their set up which suit some libraries better than others.

The libraries in the case studies have placed as many resources as possible within the portal to maximise their exposure. Anecdotal evidence suggests that all databases are being accessed more frequently than prior to the library having a portal, despite not all databases linking to full text. Royal Holloway University Library has found that updates to electronic records can now be made by a wider range of staff, as knowledge of HTML is not required to perform updates within the portal, as was previously.

The concept of a 'one stop shop' which allows access to many databases via a single point, benefits the library's users as they are now able to search using a single interface and learn one method of searching, instead of having to search different databases separately.

Two of the libraries in the case studies have made a conscious decision not to refer to their portal as a separate part of their overall delivery of resources. They refer to the portal as 'new technology' which supports access to online services. All the libraries have a user-centred approach to using technology to improve their services to users.

Staff skills and training

The libraries in these case studies found that although staff had the necessary skills to implement the portal technology, the experience has been a steep learning curve for some. Some technical knowledge and an awareness of the different types of protocol are thought to be necessary. As library staff are instrumental in promoting the portal to staff and students of the university, it is important that the training with which they are provided prepares them for this, and to answer queries from users. They should be allowed sufficient time to familiarise themselves with the new technology in preparation for this. All the suppliers in this report were thought to have provided adequate training and ongoing support.

User education and promotion

In general, information about the portal is included in induction sessions and then incorporated into information literacy programmes. Two of the libraries see the portal as being self-explanatory, but library staff are able to provide help as required. One of these libraries, Royal Holloway, is developing an online tutorial. The Open University sees the development of an online tutorial as essential because of the numbers of distance learners they have. The development of an online tutorial could be important for other libraries in order to promote a 'self-help' culture among users.

Reducing the number of search strategies through the consolidation of databases into a single 'portal' has the potential for cost savings in user education. The library now has to produce one set of instructions, instead of one for each database.

Impact measurement

Although the libraries in the case studies are aware of the importance of collecting statistics to support anecdotal comment, evidence suggests that the setting up of performance metrics to measure the impact of the portal is not always a priority. Given that the purchase of a portal is a substantial investment, it is important to recognise that impact measurement will be needed to demonstrate that the investment was worthwhile. The library should also want to ensure that the service to users has improved as a result of the delivery of electronic resources via portal technology. User surveys will be necessary to determine how resources are being accessed and if customers are satisfied with the quality of the search results.

The process of comparison may be hindered by a lack of standardisation in the way database usage statistics are collected from the suppliers, but as mentioned previously, Project COUNTER has worked towards resolving this through the development of a Code of Practice¹¹.

For some of the libraries in the case studies it is too early in the implementation process for them to have collected sufficient evidence or to have decided how to use that evidence effectively. Basic usage statistics can be obtained from the database and from the suppliers, but a library in one case study has stated that it has yet to decide what is the best way to interpret the data it has collected. Usage of databases may have increased but this does not indicate the quality of the information found by the user and whether he/she is satisfied with the results.

The University of Exeter library has been able to demonstrate that the number of users accessing full text has increased since the implementation of the portal. This early proof of the effectiveness of collecting statistics is an example of 'best practice' of setting up impact measurement in the planning stages of implementation.

Future development of portals

Higher education institutions need to recognise that library portals are a vital part of the integration of electronic resources into a university wide system. At the same time it should be appreciated that library portals offer different services and fulfil different purposes to institutional portals. Institutional portals provide information about and access to the facilities and activities of a university, whereas library portals offer specialised access to the library's electronic resources, usually via a single interface and with the facility to cross-search databases. Library staff should be prepared to communicate their role in electronic delivery to ensure that the library has an appropriate contribution to the overall interoperability of the various systems. This will include VLEs and other methods of delivering teaching and learning materials.

As demonstrated in these case studies, suppliers of portal products have been willing to work with libraries to improve their products and will continue to do so. Negotiations between libraries and database suppliers will facilitate further Open URL compliance to improve the delivery of electronic resources to library users.

Access to electronic resources varies but the move towards a single sign on facility continues, with Athens leading the way on this development.

¹¹ For further information see <http://www.projectcounter.org>

Recommendations

The following consolidated recommendations have resulted from the advice the five libraries have offered to libraries considering a portal, together with the overview these case studies have presented.

- The purchase of a portal is a substantial investment so the suitability of a portal to deliver electronic resources in a particular library should be considered
- Consult other libraries with portals for advice and to determine what skills will be required during and following implementation
- Contact portal suppliers to provide on site demonstrations
- A small team approach has proved to be the most effective way to combine the need to action the implementation and to consult key staff simultaneously
- Allow ample time for planning the implementation of the portal and its implications for users
- Check the compliance of the access protocols for the databases which are to be placed within the portal
- Determine any 'hidden' costs, such as staff time, to implement the system, carry out upgrades, also staff training and user education
- Include the portal in staff training programmes and ensure that library staff have time to familiarise themselves with the new technology
- Check the portal thoroughly but do not be afraid to make it 'live' for users
- For ease of use, work with the supplier to provide a 'user friendly' interface
- Manage user expectations if necessary through user education sessions. Search capability may not match their experiences of using internet search engines
- Set up performance metrics in the planning stages of implementation and collect evidence to demonstrate the value of the portal in the delivery of electronic services to users
- Consider the development of an online tutorial to promote a 'self-help' culture.

Appendix 1

Questions for interviews - case studies in managing library portals development

Name of institution:

Name and position in institution

1. Library portal

- 1.1 What is the name of your library portal product?
- 1.2 Which version do you have?
- 1.3 Who was involved in the choice of product?
- 1.4 Was there any consultation of staff outside the library? (teaching, academic, senior staff of the institution?)
- 1.5 Was any 'needs analysis' conducted pre-purchase?
- 1.6 Did you go out to tender?
- 1.7 If not, why was this?
- 1.8 What, if any, pre-assessment of portal products took place?
- 1.9 Why was the decision taken to implement a library portal?
- 1.10 Why did you choose this product?
- 1.11 What criteria were employed in making the choice?

Prompts:

Reputation of supplier

After sale support

Interoperability

Value for money in price and pricing model

Any other?

- 1.12 Was there any specific methodology used in the decision making process?
- 1.13 Is there an institutional portal?
- 1.14 If yes, why was it decided to have an additional and separate library portal?
- 1.15 What were the specific aims in having a library portal?
- 1.16 Did you have any particular group in the institution to which you intended to aim the services of the portal? (*Prompt: academic staff and postgraduates, research staff, undergraduates, all? Or hadn't thought of this*)

2. Budget

- 2.1 Was an adequate budget allocated to the purchase and development of the library portal?
- 2.2 Were there any unforeseen costs?
- 2.3 Did the budget allow for full implementation and on-going development of the library portal?
- 2.4 If not, are there any problems with this?

3. Integration with LMS and other systems

- 3.1 Which library management system does the library have?
 - 3.2 Is the supplier the same as your library portal supplier?
 - 3.3 Was this a conscious decision to have the same supplier? If so, why?
 - 3.4 Does the library portal integrate with the institutional portal? (if there is one)
 - 3.5 With which other systems does the portal have to integrate?
- Prompt: Library management system, (library catalogue), VLE, (past exam papers, reading lists)*

4. Pre-implementation

- 4.1 What were your main concerns about the implementation of a library portal?
- 4.2 How were these addressed?
- 4.3 Did the concerns prove to be unfounded?
- 4.4 What support did you receive from the supplier pre-implementation?
- 4.5 Would you have liked more support? If so, in which areas?
- 4.6 Were training sessions run by the supplier? Please give details.

5. Implementation

- 5.1 Did you have a project plan prior to implementation?
- 5.2 What was the timescale from purchase to the 'live' date?
- 5.3 Was this longer than expected? If so, why was this?
- 5.4 How was implementation managed? (one person? Team approach?)
- 5.5 Did you pilot the portal? If so, who with and why was this group chosen?
- 5.6 Were all the functions available at the 'live' date? If not, why was this?
- 5.7 Did you have a 'launch date'? If yes, was this to everyone or to a specific group?

6. Functionality and content

- 6.1 What functionality does the library portal have?

Cross-searching?

Personalisation?

Customisation?

De-duplication?

Refining of research?

Email alerts?

Single point of entry to databases?

Web links to library catalogue, institutional home page, anything else?

- 6.2 Did you experience any specific problems with any of the functions? If so, what were these and how were they resolved?

- 6.3 Which databases and e-journals have you placed within the portal?

(Prompt: all, free, subscription, cross-searchable, other)

7. Sign –on

- 7.1 How do users access the library portal?
- 7.2 How do they sign on? (by user name, password?)
- 7.3 Is there further authentication required to access databases? (Athens compliance?)
- 7.4 If you do not have a single sign-on, is this something to which you aspire?
- 7.5 Do you have on-going problems about security?
- 7.6 Can the library portal be accessed from off site? If so, how does this work? (password required?)

8. User interface

- 8.1 Was there any requirement from the supplier to acknowledge the product on the user interface?
- 8.2 What have you named the portal?
- 8.3 Are there any changes you would make to the current interface? If so, what are these?

9. Staff skills

- 9.1 Which skills did you find library staff required to implement the portal? (e.g. cataloguing, technical, training?)
- 9.2 Would you say that staff had sufficient skills or was training required? If so, in which area?
- 9.3 Which skills were required for on-going maintenance? (e.g. technical, management, training?)
- 9.4 Were skills already held or were they developed during implementation?

10. Staff training

- 10.1 Was training offered to library staff? To academic staff? To other staff members?
- 10.2 Initially, how many training sessions were run? How many attended each session on average?
- 10.3 Who ran the training sessions?

11. Promotion and User Education

- 11.1 Did the original budget include promotion and user education sessions? If not, how are the sessions managed? (within normal user education sessions?)
- 11.2 Is the library portal included in induction sessions? If yes, how effective is this?
- 11.3 Does explanation of the portal functionality to staff and students have much impact on library staff time?
- 11.4 Are there any particular groups of staff or students who require more intensive training, explanation? If so, why is this and are you able to provide it?
- 11.5 Do you have an online tutorial for the portal, or are there any plans to develop one?
- 11.6 Did you have a formal 'launch event' (or is one planned)?
- 11.7 Did you develop a formal promotional plan for the portal?
- 11.8 Did the supplier offer any support for promotion (e.g. promotional material)?
- 11.9 Are there any other means for marketing the portal?

12. Impact measurement

- 12.1 Were any performance metrics set up before implementation of the portal?
- 12.2 Do you have access to any database usage figures?
- 12.3 Are these collected in-house or by the supplier?
- 12.4 Have you utilised these statistics in any way? If so, how? If not, do you intend to do so?
- 12.5 Was the impact on staff time approximated beforehand?
- 12.5 Was it calculated or measured in any way during implementation?
- 12.7 Is there any on-going impact measurement?
- 12.8 Have the aims of the portal been met?
- 12.9 What would you say are the main benefits of having the portal?
- 12.10 Who are the main users of the portal? (*undergraduate, research staff and students, academic staff, other?*)

13. Continuing support from supplier

- 13.1 Was sufficient support available from the supplier following implementation?
- 13.2 Is support offered to implement upgrades?
- 13.3 How are upgrades managed/will be managed?

14 Change in roles for staff

14.1 Have there been any significant changes in the roles of library staff following the implementation of the portal?

14.2 How is content of the portal managed and who has responsibility for this?

15 Advice to other libraries implementing a library portal

15.1 Do you have any advice to offer to other libraries who are considering implementing a library portal?

Prompt:

Budget

Staffing and staff skills

Timescale

Pilot

Training

User education

Anything else?

15.2 Would you be willing to share any impact measurement figures to help other libraries in their decision?

15.3 Any general advice, further comments?

16 The future of the portal

16.1 Do you have any plans for the future development of the library portal?

16.2 Are there any functions which you would like to have that the portal does not currently provide?