



Project Management

Final Report

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Foreword

When the JISC's HeadLine project began in early 1998, the academic information world was facing another key change in its role of delivering the most appropriate information to each user at the required time. The range and type of content available in electronic form had extended rapidly in the previous few years, and was continuing to expand. This trend was delivering more and more core academic material in electronic form, making the medium very much part of mainstream provision in all academic libraries. The challenge was to find methods which would guide users quickly and easily to both electronic and hard copy information, in the combination most useful to them. We needed to develop effective 'hybrid libraries'.

The HeadLine project has explored and developed such methods, with the needs of the user always to the fore. Its achievements are numerous, and I would encourage readers of this Final Report to explore the legacy website for fuller information. In particular, the HeadLine PIE (Personal Information Environment) is there as a lasting contribution, available to the JISC community to customise and use in their own institution. The PIE is a web-based system which provides the user with a single interface to both print and electronic resources and services. It enables the user not only to identify relevant resources, but to access them as well. Because it is customisable by each individual, it can truly create a *personal* portal. This type of concept, new and undeveloped when HeadLine started, is now taking hold in the planning of systems and services worldwide, and the HeadLine team are to be congratulated for their contributions to its development. There is other significant work to be found under the HeadLine banner, including the RDM (Resource Description Model), which describes collection level resources; SHERLOC (SHElved Resource LOCator), which is an interactive map that allows users to locate library materials and services, and the EEDD (End-User Electronic Document Delivery) module, whose full title is self-explanatory. All offer methods for the information specialist to deliver efficiently for their users. Equally importantly, they contribute to our wider expertise in using ICT innovatively to enhance and expand our services to our users.

In the course of producing these working modules, the HeadLine project has also made significant contributions to national and international developments in resources metadata, authentication and authorisation, and administrative and strategic issues for Higher Education libraries handling current developments in information resources management.

As the HeadLine project comes to a close, its influence will continue. Some of the team will be working on new JISC projects, building on knowledge and ideas which first emerged under HeadLine. All hope that the extensive publications and documentation which HeadLine has also produced will support other teams and individuals worldwide in their explorations and research.

Finally, on behalf of the Steering Committee, I must congratulate all the members of the HeadLine team, past and present, on their excellent work. They have achieved the main aims of the project with model efficiency and commitment, overcoming the inevitable problems and unexpected obstacles with calm and good humour. The Steering Committee wish them all the best for their next projects.

Margaret M Coutts

Chair, HeadLine Project Steering Committee

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Executive Summary

HeadLine (**H**ybrid **E**lectronic **A**ccess and **D**elivery in the **L**ibrary **N**etworked **E**nvironment) is one of the **five** Hybrid Library projects funded under the Electronic Libraries (eLib) Phase 3 programme of the UK Higher Education Joint Information Systems Committee (JISC). Project Partners are the London School of Economics, London Business School and the University of Hertfordshire. This was originally a three-year project, beginning in January 1998, however it was extended for a further six months and hence finished at the end of July 2001. HeadLine's aim was to design and implement a working model of the hybrid library, in actual academic environments in the subject areas of Economics and Business Studies. The project presented the user with a wide range of library resources, regardless of physical form, via a common Web-based interface, the Personal Information Environment.

This is the Final report published by the HeadLine project. The report covers the period subsequent to that covered by our last annual report and up to the end of the project (1st August 2000 to 31st July 2001) and on the project overall. We have reflected on the 'lessons' coming out of the project which can be usefully applied elsewhere. HeadLine has participated in much dissemination and collaboration, this has meant that the project has played a significant part in national and international advancement of our field. In the period subsequent to our last annual report, the project concentrated on rolling out HeadLine services to users, and the summative evaluation of our concept of the hybrid library in use.

Key work during this period centred on releasing further upgrades to the Personal Information Environment, integrating further components and features (such as searching the resource database and cross-target searching), further refining the Resource Description Model, seamlessly up-grading the PIE at the partner sites, and in-depth evaluation of our model of the hybrid library from the point of view of end-users and those within the wider library community.

The project experienced some changes and problems during its final year, especially with regard to maintaining users interest in the PIE and encouraging participation in evaluation activities. But these were all successfully resolved, and HeadLine continued to work with an effective and well-integrated project team.

Main achievements of the Project

In summary, during the life-span of the project we have:

- Implemented a working Personal Information Environment for each of the partner sites (and accessible by guest users).
- Operationalised HeadLine deliverables and learning outcomes at partner sites.
- Implemented a model for collection-level resource metadata which can be successfully used either by a single institution, or shared between more than one.
- Implemented a modular, infrastructure-independent 'Authentication-Broker' model.
- Implemented discovery-to-access software, specifically the SHElved Resource LOCator (SHERLOC) and the End-user Electronic Document Delivery (EEDD) system.
- Carried out formative and summative evaluation of our hybrid library model.

In summary, the HeadLine Project has made a significant contribution to national and international debate on:

- Collection-level Resource Metadata,
- Authentication and Authorisation,
- Resource interface requirements of end users,
- Personalised library portals,
- Administrative and strategic issues for Higher Education libraries in the rapidly developing field of information resource management.

0. Introduction

As an innovative project from which others are expecting to learn, the HeadLine Project Board and Project Team believe that it is important to provide information that will be speedily accessible to the wider community. This final report has been prepared primarily to ensure that the lessons that have emerged from monitoring and evaluating the progress and success of the project are recorded, systematised and disseminated.

The final report's framework meets the requirements specified in the "eLib Phase III: Format for Final Project Reporting (October, 2000)", which is intended to provide eLib with a consistent and coherent set of data from all projects about activities and results, the process of implementation, reflections on what has been learned and revised understandings and expectations about the project innovation. This in turn is intended to dovetail with management agreements made with eLib about regular reporting.

In terms of our own calendar this final report covers the second 6 months of Phase 3 (August 00 - January 01) and the whole of the HeadLine extension period, which occurred from February 01 until the 31st July 01 (the end of the project). We have also reported on the project overall and have reflected on the 'lessons' that have come out of HeadLine and that could be usefully applied elsewhere. The report includes systematic feedback from the trials of the HeadLine Personal Information Environment, evidence of project outcomes and effects, an exit strategy and a clear statement of recommendations to JISC for possible post-project exploitation.

We have created a legacy web site for the project <http://www.headline.ac.uk/>, to act as an archive of project material. To improve the readability of this report we have chosen to provide references to the location of relevant documentation on the HeadLine legacy web site. The web site will be maintained for a guaranteed period of at least five years by the LSE Library.

0.1 Project and eLib Timetable

Calendar years	1998	1999	2000	2001
HeadLine phases	Phase 1: 1st January 98 - 28th Feb 99	Phase 2: 1st March 99 - 28th Feb 2000	Phase 3: 1st Mar 00 - 31st Dec 00	Extension 1st Jan 00 - 31st July 2001
eLib years	eLib year 1: 1st Jan 98 - 31st Jul 98	eLib year 2: 1st August 98 - 31st July 99	eLib year 3: 1st August 99 - 31st July 2000	eLib year 4: 1st Aug 00 - 31st Dec 00

1. Activities and Progress

1.1 Main Activities undertaken by the Project

During the period from 1st August 2001 to 31st July 2001, the project has made progress in the following areas: integrating further components and features to the Personal Information Environment, seamlessly up-grading the PIE at Partner sites, further refining the Resource Data Model, and evaluating our model of the hybrid library from the point of view of end-users.

Between August 2000 and January 2001 the team mainly undertook development and evaluation activities. The HeadLine extension period (February-July 2001) focused on activities associated with the Operational roll-out work package. Project Management and Dissemination activities were ongoing throughout. The project's major activities are reviewed in the following sections.

1.1.1 Research & Development Activities

Research and development during the final phase of the project has concentrated upon further refining the HeadLine hybrid library model, integrating further components and features (such as searching the resource database and cross-target searching) to the Personal Information Environment, summative evaluation and exploring the issues of operationalising the project's learning outcomes at the partner sites.

1.1.2 Operational Roll-out Activities

User support and PIE maintenance

This involved basic tasks associated with the support of existing PIE user groups at each of the partner sites, and also the guest users within the wider community. These basic tasks included continued maintenance of the PIE pages and of the resource database (so that the resources provided via the PIE remained current), administration of the PIE user database, promoting the PIE to users, maintaining interest in the PIE, developing training materials and providing training sessions.

The development of the HeadLine software was frozen during January 2001. The software and documentation package were made available during July 2001 via the HeadLine web site. Subject to available resources, the project staff remaining at the LSE will offer advice to other UK HE institutions that wish to implement the PIE or any of its associated services

Operationalising HeadLine deliverables at the partner sites

The aim was to operationalise at least some (if not all) elements of the PIE and embed HeadLine learning outcomes at each of the sites. PIE maintenance and administration were to be handed over to mainstream Library staff.

At the LSE the HeadLine Resource Finder database was implemented by the Library at an early stage in the project. It was implemented as a 'Journal Finder' sitting behind the Library's subject web pages (EASI - Electronic Access to Subject Information), giving access to a subject-based interface to full-text electronic journals. This provides a relational database back end which ensures that any amendment to a journal record is replicated across any subject category in which it appears. This represents a considerable efficiency gain on the former flat Web page method of providing this service to users.

A key feature in the provision to users of a range of electronic services from various suppliers is authentication of those users, with appropriate rights, privileges and restrictions. A source of difficulty to administrators and annoyance to users is the multiple username and password requirements of a range of information providers. The HeadLine authentication broker provides a potential solution and it is currently in use at the LSE in the End-User Electronic Document Delivery service which provides journal articles in electronic form to a user's desktop. The authentication broker is invoked at the point of document request by the user. EEDD was initially trialled by a few LSE departments and has now become a core service to LSE academics. The SHERLOC concept (the interactive map which allows users to locate materials and services within

the library) has been incorporated within the LSE's Unicorn catalogue. The bibliographic details include a link to a map displaying the location of the item.

The project team has worked with the LSE Library's Information Services Division to identify whether and how HeadLine software/learning outcomes can be integrated within the library's core services. A plan to replace the EASI database with the HeadLine RDB in the short term, and to up-grade the web interface to electronic resources using ideas and learning outcomes from the development of the HeadLine Personal Information Environment in the long term is in progress.

Operationalising the PIE or other HeadLine software at the University of Hertfordshire has been discussed with relevant Learning and Information Services personnel. HeadLine learning outcomes have been the catalyst for the development of the UoH Managed Learning Environment (StudyNet). The MLE, based on a Lotus Notes Domino server with a web browser front end is a joint venture between MIS, Learning and Information Services and the University's Learning Teaching and Development Committee. The MLE, like the HeadLine PIE, is user-centred and allows user personalisation. The MLE provides the user with services and resources that are tailored to their needs (faculty-specific news, a personal calendar, course related information etc.). The user can personalise their home page. For example they can add their own web sites, tasks (e.g. assignments) and post-it notes. The development of the 'library/learning resources' section of the MLE is not yet complete. UoH are interested in the HeadLine RDM and SHERLOC, it is possible that these concepts will be incorporated within the MLE.

The LBS Forum was deployed in 1997 as the School's intranet, and is based on Lotus Notes/Domino web Notes database publishing technology. It provides every user (including students, faculty, staff and alumni) with a personal account and suites of resources and services that can be both globally available and also restricted by status and eligibility. For example, students can enter and contribute to class discussion areas, but only those for which they are individually registered. The Library Services area of the Forum was developed in 1999 and released in December of that year, and uses the Notes user model to deploy key HeadLine concepts, including the differentiation of resource availability and presentation according to such key factors as users' status, current location and contractually-defined access restrictions that may apply. The Forum's successor, the EIP (Enterprise Information Portal) will implement additional HeadLine learning outcomes. Currently in its conceptual phase, it will be the portal to all LBS resources and services. There is a recognised need for LBS users to be able to create their own lists of 'favourite' resources. The EIP, unlike the Forum will allow user personalisation.

In early 2001 SHERLOC was embedded within the Forum, thus allowing users to locate specific library resources and services. The PIE was embedded within the Forum in early July 2001 and is available to all at LBS.

LBS also operationalised the HeadLine Resource Finder database at an early stage in the project. This was implemented as a Journal Finder, a search tool to the serials "meta-list" which records the availability of serials titles in hard copy and electronic formats and, where technically possible, links to titles at individual title or service level. Journals Finder has been very heavily used at LBS. Improvements have been identified and LBS technical support staff are currently working on Journal Finder II. This will incorporate further HeadLine concepts and learning outcomes. Using a relational, rather than a ROADS database Journal Finder II will be able to cope with multiple instances of the same resource and it will 'grey' out resources unavailable to off-campus users.

User behaviour study

The extended user behaviour study (phase two of the PIE evaluation) aimed to build on the basic evaluation (phase one). It intended to ascertain whether the HeadLine hybrid library model (the PIE) meets the needs of both new and mature users at the partner sites. Difficulties were encountered due to poor attendance at PIE training sessions and a very low questionnaire response rate. These difficulties are detailed in section 2.1.

The extended user evaluation study included a successful investigation of Guest User's (from the wider library community) use of the PIE and their attitudes towards hybrid library functionality. The evaluation of user perceptions and their ongoing usage of the PIE was much smaller than planned. The reasons for this are outlined in section 2.1.

1.1.3 Project Management Activities

Steering Committee

The Steering Committee was established at the beginning of the project, it comprised academics and senior managers from partner institutions, and from the information sector, as well as representatives from vendors and information providers. During this reporting period the Steering Committee continued to play an active role in guiding the project, endorsing decisions and providing expertise in key areas such as exit strategies, the project's extension proposal and the evaluation of the PIE.

Steering Committee Meetings during the year

8 November 2000 - The HeadLine Annual Report: 1999-2000, Presentation on the HeadLine PIE Hybrid Library Model, Practical introduction to the HeadLine PIE (a demonstration of the 'almost final version'), Institutional plans for HeadLine developed services, HeadLine Extension Proposal.

23 May 2001 - HeadLine Exit Strategy, Report on Phase One of the PIE Evaluation, demonstration of End-User Electronic Document Delivery.

Margaret Coutts of the University of Kent at Canterbury has been Chair of the Steering Committee since its inauguration, and has contributed a great deal of time and useful advice to the project in this role. There were no changes to the membership of the Steering Committee during the reporting period. However Carolyn Alderson attended both the November and the May Steering Committee meetings in Albert Prior's place; Jonathan Field stood in for Peter Gethin at the May 2001 meeting.

Membership of the Steering Committee

Ms Margaret Coutts (Chair), Director of Information Services and Librarian at the University of Kent at Canterbury

Dr Colin Harris, University Librarian, Manchester Metropolitan University and JISC/CEI representative

Professor Danny Quah, LSE

Dr Jeff Sampler, LBS

Dr Mike Herman, University of Hertfordshire

Mr Albert Prior, Publisher Relations Manager, Swets & Zeitlinger

Mr Peter Gethin, Managing Director, SIRSI UK Ltd

Ms Jenny Walker, Silver Platter (until February 2000)

Ms Di Martin, Director of LIS, University of Hertfordshire

Mr Russell Altendorff, Director of Information Systems Division, LBS (from October 1998)

Mr Alan Robiette, LBS (until September 1998)

Mr David Dalby, IT Services Manager, LSE

Mr Pedja Pavlicic, Silver Platter (from February 2000)

Project Board

The Project Board comprised a senior staff member who plays a key role in library strategy from each of the three partner institutions, and the Project Manager. The role of the Board was to advise the team and direct the project at a strategic level, as well as to match project aims with institutional policies and developments. The Project Board was chaired by the Project Director.

The Project Board met approximately every two or three months, with meeting venues normally rotated between the sites of the three partners. Communication was also maintained amongst this group via the project board mailing list (hosted on JISCmail). Agendas, minutes and other formal reports to and of Project Board meetings were routinely copied to the Chair of the Project Steering Committee, and to the eLib Programme representative member of the Steering Committee.

Project Board Meetings during the reporting year

20 September 2000, LSE Library

4 January 2001, UH St Albans Library

21 March 2001, LBS Library

28 June 2001, LSE Library

1.1.4 Dissemination Activities

The following dissemination activities were scheduled for this period of the project, items in **bold type** are extracted from the **Communications Plan** (i.e. communication aims) and the plain text underneath is a description of HeadLine's progress in these areas. This reporting year covers the third phase of the project and the extension period, the tasks scheduled for these phases mainly fall into similar categories (outlined below). However, the "End of Project event" and "Building the software archive" were scheduled as phase three tasks only.

General awareness

The website has been used to disseminate material to all interested parties and the url (www.headline.ac.uk/) is included on all project correspondence, email, presentations and literature. Branding has been made consistent by the use of the HeadLine logo which appears on all letter paper, web pages, presentations etc., and the use of project stationery and business cards. In early July 2001 we investigated how many web sites link to the HeadLine website. Google found 503 sites, Altavista gave 130 sites. Articles on HeadLine and related topics have been published in several journals during the period 1 August 2000 to 31 July 2001, and these are listed in the Appendix to this document. In addition to the articles listed in the Appendix, articles have also been published in newsletters, bulletins and Annual reports at the partner institutions. A complete listing of all the project's dissemination activities can be found on HeadLine's legacy web site, at <http://www.headline.ac.uk/legacy/public/diss/disslist98-01.html>.

Contribution to debate

The project's contribution to debate has helped to shape the development of future library services. Throughout the life of the project, team members have contributed to relevant discussion via membership of mailing lists in various areas, and have also participated in many conferences and seminars. Numerous papers have been given by team members on various topics (the HeadLine Personal Information Environment, the HeadLine Resource Description Model, electronic collection development, SHERLOC, End-user Electronic Document Delivery, authentication and authorisation issues etc) as well as general presentations about the project which have been made to staff in partner sites, visitors, at library schools etc.

Project Reports

All published documents have been approved by the Project Board and are made available freely to the public via the web site; this Final Report will be accessible from there.

Project Newsletter

The third HeadLine newsletter was produced in the Autumn, 2000, towards the end of Phase three. It reported on the launch of the HeadLine Personal Information Environment (PIE) at the project's partner sites and to the wider library community. It also detailed the plans for the PIE's evaluation and described the development and trial of End-user Electronic Document Delivery. This newsletter is entitled '*The Launch of the HeadLine PIE*'. It was sent to a mailing list of about 400, distributed in partner sites, and at the end of project events, advertised on various email lists and on the public web site.

Reactions to each of the newsletters have been very positive, it has been produced and distributed on a fairly regular basis, but only when the project has something to report on a particular topic. Copies of all the HeadLine newsletters can be found at: <http://www.headline.ac.uk/public/diss/documents.html>.

Guest access to the PIE (Phase three)

Guest access to the live PIE (subject to any copyright restrictions associated with resources that it contains) was launched to the wide library community in October 2000. Information and instructions for becoming a guest user were made available via the Autumn 2000 HeadLine newsletter, at dissemination events and via mailing lists such as HeadLine-Users. Each guest user was asked to complete a web-form and was given username and password access to their own PIE account. Guest users were invited to participate in Phase two of the PIE evaluation.

End of Project Event (Phase three)

HeadLine participated in an end of project workshop that was presented jointly by all five eLib Hybrid Library Projects. The workshop was co-ordinated by UKOLN and supported by the DNER. It provided an update on the progress and emerging services of the five eLib hybrid library projects and included presentations and demonstration/workshop sessions. The first workshop, which was held on the 1st of November at the British Library was highly successful, and sold out very rapidly. Hence a further two workshops were held, one on the 20th February 2001, Geoffrey Manton Building, Manchester Metropolitan University, the other on the 27th February 2001, Wolfson Suite, Edinburgh University Library. These two workshops were similarly successful and well attended.

Building the Software Archive (Phase three)

An archive of all the software that the project has developed has been compiled. This archive was released with the launch of HeadLine legacy web site at the end of July 2001, it is available at: <http://www.headline.ac.uk/public/deliverables/>.

HeadLine Legacy web site

The HeadLine legacy web site <http://www.headline.ac.uk/> was launched at the end of July 2001. It aims to preserve an electronic record of the project's activities and learning outcomes. The collection of HeadLine reports, dissemination achievements, software, reports, learning outcomes etc. are presented and described on this web site.

Dissemination Achievements

A list of dissemination achievements undertaken during this reporting period (1 August 2000 - 31 July 2001) is appended to this report. Previous activities are detailed in **the First, Second and Third Year Annual Reports**. A complete listing of all the project's dissemination activities and HeadLine's dissemination materials (powerpoint files, articles etc) can be found on HeadLine's legacy web site <http://www.headline.ac.uk/legacy/public/diss/>.

1.2 Changes to the project

During the reporting period 1st August 2000 until 31st July 2001 there have a few changes to the project, they are described below.

1.2.1 The Operational Roll-out work package and evaluation of MetaLib/SFX

Due to an anticipated under-spend, towards the end of 2000 the project sought and gained approval from eLib/JISC for a six-month time extension to HeadLine's implementation and evaluation phase (the Operational Roll-out work package). This work package ran from early February 2001 until the 31st July 2001, it enabled the project team to evaluate the final (stable) version of the HeadLine software.

The DNER Programme Office requested that project team members (Anne Gambles and John Paschoud) should carry out a comparative review of MetaLib/SFX, a hybrid library product offering user-personalisation. The project proposal was agreed and necessary funding obtained. The evaluation of MetaLib/SFX had the same time-scale as the Operational Roll-out work package.

1.2.2 Changes/additions to the membership of the Project Team

During the period there was one addition to the Project Team. A combination of several events (detailed below) led up to the creation of an additional Project Officer post. The post was created to assist with tasks associated with the Operational Roll-out work-package. It was based at the LSE but also served the UoH, and to a small extent the LBS. Imelda Noble joined the Team on the 28th February 2001. Her role required her to understand the Project's aims, the services that it had developed and to become familiar with the partner institutions within a very short time period. Imelda quickly and ably established herself as a valued member of the team.

The Project Board originally agreed to fund a three-month, part-time, Project Officer post at UoH commencing in early October 2000 to support the launch of the UoH PIE. Unfortunately, due to the personal circumstances of the staff member that had been identified this post was not filled. Following JISC's approval of the project's time extension and the comparative review of MetaLib/SFX the Project Board agreed that rather than have a post based at UoH, there should be

a six-month, full-time Project Officer post based at the LSE, to assist with the tasks associated with the Operational Roll-out work-package on behalf of all partner sites. During the period 1st February - 31st July, 2001 Anne Gambles worked part-time managing HeadLine's Operational Roll-out package, and part-time managing the evaluation of MetaLib/SFX. John Paschoud retained overall responsibility for the HeadLine Project's management.

1.2.3 Potential extension of the project to additional sites outside of the consortium

The project decided to concentrate on embedding HeadLine deliverables at existing partner institutions. It was not possible to extend HeadLine to sites outside of the consortium without additional staff resources.

1.3 Main Objectives

All of the project's main aims (as stated in the Project Proposal) have been achieved. They are stated and detailed below.

1. To define the next stage in the development of the end-user library environment, going beyond resource discovery to resource access

Throughout the life of the project, team members have contributed to debate and helped to shape the future development of the end-user library environment. This has been via membership of mailing lists in various areas, participation in many conferences and seminars and the writing of numerous papers.

The project has made significant contributions in several areas. These include:

- **The personalisation of library services:** specifically the development of the personal portal interface paradigm as a useful model for the hybrid library. The project team have been in close contact with hybrid library projects both within and outside of the eLib programme (such as the MyLibrary project based at North Carolina State University and the hybrid library project based at Leeds University) and have discussed HeadLine concepts and learning outcomes with them.
 - **Single-sign-on:** seamless access to password-protected resources and services and access to these resources and services via a uniform interface.
 - **Authentication and authorisation:** John Paschoud, the Project Manager, has contributed to discussions on authentication and authorisation at a national and international level and is involved in the implementation of SPARTA, the successor to the ATHENS authentication system.
 - **Collection-level resource description:** specifically the modeling of resource metadata within a relational database structure. The decision by the project to use a relational structure was controversial at the time, although others, including the developers of ROADS (which is used as a platform for SOSIG [<http://www.sosig.ac.uk/>] and other JISC-supported resource gateway services) have since come to very similar conclusions¹.
- ### 2. To establish a working model for consistent access for library materials regardless of physical form, which is transferable across broad subject disciplines

The Personal Information Environment (PIE) and its associated modules (the Resource Data Model, the Shelved Resource Locator and the End-user Electronic Document Delivery system) was HeadLine's hybrid library model. It was (indeed is) a working system that allows consistent access to library materials regardless of physical form. The RDM contains the resource metadata, it was designed to enable the provision of access to multiple locations of a single resource, each of which may have different levels of holdings and depth. For example, the user (via the PIE (or other interface) to the RDM) can view all locations of a particular journal title, the print version available in the Library (for which access is facilitated through SHERLOC, which displays the map

¹ [Hamilton] Hamilton, Martin; Archived message to the ROADS discussion list on 3rd May 2000 <http://www.roads.lut.ac.uk/lists/open-roads/2000/05/0000.html>

location of the journal), the electronic version available through a remote database (e.g. JSTOR), and perhaps also a CD containing abstracts and bibliographic details.

HeadLine's subject focus was economics, finance, business and management. We have demonstrated that our model is portable to other subject areas. In addition to these subjects, the UoH PIE contains tourism, marketing and accountancy resources. The HeadLine model can accommodate resources from any subject area.

3. To implement the model in a real-life environment, using tools and technologies which will be widely available to the academic library community

The working PIE was piloted at each of the project's partner institutions. The PIE was launched as an LBS Library service during July, 2001 and elements of it (e.g. the RDM) will shortly be embedded within library at the LSE. All technology associated with, or used by, the HeadLine PIE has either been developed by the project or was freely available to academic institutions. The PIE and all associated software was made available (at no charge) via the HeadLine legacy web site <http://www.headline.ac.uk> before the end of the project.

1.3.1 Main Objectives for the reporting period 1st August 2000 until 31st July, 2001

The original (Project Plan) objectives for Phase 3 of the HeadLine Project were:

- **Implementation of feedback mechanisms at consortium sites**
- **Implementation of enhancements/modifications at consortium sites**
- **Possible extension to other subject areas**
- **Potential extension to additional sites outside the consortium**
- **Summative evaluation**
- **Final reports, seminars and other dissemination activities**

Additional objectives for this period included:

- **Development of PIE maintenance tools for library staff**
- **Implementation of an Exit strategy**

The objectives for the HeadLine Extension period (February 2001 - July 2001) were as follows:

- **Continued User support and PIE maintenance**
- **To work towards operationalising the PIE at the partner sites**
- **To carry out an extended user behaviour study**
- **To continue disseminating project activities and findings**

1.4 Outputs from the project

The project produced deliverables in the form of documentation, software, demonstrator services, actual services (listed below) events and dissemination activities (listed on the web site <http://www.headline.ac.uk/legacy/public/diss/disslist98-01.html>). Following the successful launch of the PIE at the partner sites and its promotion to the wider library community there were 'continuously emerging requirements' for the HeadLine hybrid library model and hence the PIE and its associated software. We were able to implement some of this additional functionality within subsequent PIE releases. Following the cut-off date (late January 2001) for software implementation, requirement specifications and working papers (detailed and referenced below) were drawn up for proposed functionality that we hadn't implemented.

1.4.1 Documents

<http://www.headline.ac.uk/public/diss/documents.html>

- Newsletters (three)
- Guides to the PIE (online and as hard-copy handouts and leaflets)
- HeadLine bookmarks
- Analysis of Information Desk Enquiries
- What Users Want - 2 page summary based on information desk enquiries work and Staff Consultation at partner sites
- Model Licence working paper and Model Licence (based on NESLI licence)
- Phase 1 Summative Evaluation - Review of first phase of the project
- Report on the launch of the HeadLine PIE at the University of Hertfordshire and the planned launches at the London School of Economics and the London Business School.
- Report on the launch of the HeadLine PIE at the London Business School.
- Editing the HeadLine Resource Database using Access and Administering Resources in the PIE.
- Report on the results of Phase One of the Personal Information Environment Evaluation Programme.
- Report on the results of Phase Two of the PIE Evaluation Programme: the evaluation of the Guest User's use of the PIE and their attitudes towards hybrid library functionality.

1.4.2 Technical Documents

- Personal Information Environment interface documentation:
<http://www.headline.ac.uk/legacy/public/deliverables/interface.html>
- Resource Data Model documentation:
<http://www.headline.ac.uk/legacy/public/deliverables/rdm.html>
- End-user Electronic Document Delivery documentation:
<http://www.headline.ac.uk/legacy/public/deliverables/eedd.html>
- SHELfmark and Resource LOCator documentation:
<http://www.headline.ac.uk/legacy/public/deliverables/sherloc.html>
- Authentication broker documentation:
<http://www.headline.ac.uk/legacy/public/deliverables/auth.html>

1.4.3 Working Papers and Requirements Specifications

- Options for printing PIE pages
Working paper (with options for technologies to implement):
<http://www.headline.ac.uk/public/deliverables/printable.html>
- Current Awareness features on links/sources
Working paper: <http://www.headline.ac.uk/public/deliverables/CASreport.doc>
Requirements specification: <http://www.headline.ac.uk/public/deliverables/piecastech.html>
- Resource database administrative interface
Requirements specification: <http://www.headline.ac.uk/public/deliverables/rdb-interface.html>
- Log file administration analysis software
Requirements specification: <http://www.headline.ac.uk/public/deliverables/loganalysis.htm>

- PIE import/export functions
Requirements specification (with Netscape, Internet Explorer, EndNote):
<http://www.headline.ac.uk/public/deliverables/impexp.html>
- Calculation of which locations to display, and in what style, to a user
Requirements specification:
<http://www.headline.ac.uk/public/deliverables/pieresources.html>
- RDM link-checker
Requirements specification (implemented as an admin bolt-on to the PIE software during the Operational Roll-out work package):
<http://www.headline.ac.uk/public/deliverables/rdblincchecker.html>

1.4.4 Demonstrators

The demonstrators are 'mock' interfaces illustrating proposed functionality. They are a similar concept to 'story boards', the user of the demonstrator follows a prescribed path through the interface and gains an understanding of the functionality that will be incorporated within the live interface.

- Pete's PIE - Personal Information Environment: <http://www.headline.ac.uk/publications/pie/>
- Fiona the Librarian's administrative interface to the RDM:
<http://www.headline.ac.uk/publications/rdm/>

1.4.5 Software

<http://www.headline.ac.uk/public/deliverables/>

- A working Personal Information Environment for each of the partner sites, offering users with a customised and customisable interface to the library's resources in their subject area.
- Guest access to each of the three PIEs.
- The PIE user interface generator (Web portal), and underlying relational configuration database.
- The HeadLine Resource Finder - previously based on ROADS, moved to an SQL database.
- A working RDM (Resource Description Model), comprising a relational (SQL) database maintained within MS Access via an ODBC connection. Provides a means of classifying and organising data so that appropriate resources can be identified and offered to users. The model can accommodate multiple locations of the same resource (e.g. a journal title available in print in the library, in electronic full-text via a web--based service and abstracts via a CD-ROM).
- The Authentication Broker - user authentication and directory services - underpinning the user-centred HeadLine environment.
- SHERLOC - SHElved Resource LOCator. A discovery to access tool in the form of an interactive map guiding users to print collections and library facilities.
- The EEDD (End-user Electronic Document Delivery) prototype has become a deliverable. Another discovery to access mechanism for delivering electronic versions of print documents to the desktop.
- A working Z39.50 client.
- A working Whols++ client (to enable the use of the PIE as a front end to legacy databases).

Specific software components, e.g. SHERLOC; EEDD may be used separately with other standards-compliant components of existing library services.

1.5 Major Successes

1.5.1 Major successes during this reporting year

During this year of the project major objectives have been successfully achieved in the areas of:

Implementation of Personal Information Environment services

The RDM was further refined. Each of the three partner's PIEs were seamlessly upgraded to version 1.2 during the Autumn term 2000. This PIE version used the new version of the RDM and enabled users to search the metadata for resources contained within the PIE database (the RDM) and to cross-search the LBS and LSE Library catalogues. An online registration system was developed and Guest Access was launched in October 2000, therefore allowing interested individuals from the wider library community to try out using the PIE.

Development of PIE maintenance tools for library staff

The project team designed and built a demonstrator of an administrator's interface (Fiona the Librarian) to be accessible from within the PIE by library staff maintaining and up-dating the PIE resources (the metadata contained within the RDM).

Operationalising HeadLine deliverables at the partner sites

Pieces of HeadLine software have been implemented at partner sites, all have benefited from HeadLine learning outcomes and have embedded the learning within their core services. See section 1.1.2: 'Operational Roll-out Activities' for further detail on the activities undertaken.

User behaviour study and extended user-behaviour study

A basic evaluation of PIE user behaviour (the Phase One evaluation study) was carried out during December, 2000. This focused on the essential tasks that were detailed in the project's original Evaluation Plan. It involved an analysis of PIE log data collected between May 2000 and January 2001, and a questionnaire survey of end users at each of the partner sites during November/December 2000. The Phase One evaluation reported on the usage and usability of the HeadLine PIE from the end user's point of view and enabled recommendations to be made for improvements and further functionality. The Phase One PIE evaluation report can be found at: <http://www.headline.ac.uk/public/Phase1eval.pdf>.

The extended PIE user behaviour study (the Phase Two evaluation study) was carried out during the project's extension period (February - July 2001). It aimed to build on the basic evaluation and to ensure that desirable tasks were also undertaken. The Phase Two study successfully evaluated the wider library community's (Guest User's) use of the PIE and their attitudes towards hybrid library functionality through the use of a questionnaire survey. The Phase Two evaluation report can be found at: <http://www.headline.ac.uk/public/ph2questreport.pdf>.

Implementation of an Exit strategy

Each of the Project Partners produced plans for the implementation of HeadLine developed services (see section 4.2). An Exit Strategy was then drawn up to explore the various options available, as detailed in the consultation document that was put before the Steering Committee in November 1999. The Exit strategy has been implemented at each of the partner institutions and is detailed in section 4.3.

1.5.2 Additional major successes achieved by the project

In addition to the successes detailed above, other major objectives have been successfully achieved during the project's 3.5 year time-scale in the areas of:

Demonstrator approach to software development

The project implemented the demonstrator approach to software development from an early stage. For example Pete's PIE, the story-board walk through of a typical student user's PIE session led the development of the functionality required to implement a working PIE.

We found that prototyping is largely about user interface issues rather than the underlying functionality involved. Using a demonstrator to test out interfaces on potential users was

extremely beneficial. Using a demonstrator for evaluation purposes was less time consuming than developing and subsequently refining a live system would have been.

Library Resources description

HeadLine's structured Resource (meta)Data Model was implemented in a relational database management environment (PostgreSQL, but using only database-platform-portable functionality) and populated with descriptions of approximately 300 collection-level resources appropriate to the subject focus of target users. Staff at all three partner sites were involved in the collection and assimilation of data. The RDM enables the display of multiple locations of the same resource (each with different levels of holdings, depth and access) and heterogeneous cross-resource searching across Z39.50, WhoIS++, http and other protocols as required.

Library User metadata

The modular, infrastructure-independent 'Authentication-Broker' model was adopted, refined and implemented for the acquisition of metadata about subject-interests and access-rights of end-users of the PIE. This effectively allows the library to take advantage of existing user data to which substantial university management information services resources are typically already committed, avoiding duplication of the same work by library staff. The project has also helped to promote and influence greater 'joined-up' working in this way, between elements of university infrastructure - with the same model and software tools becoming adopted as an institutional standard by the lead partner.

SHERLOC

The SHElved Resource LOCator (SHERLOC) has proved very popular within partner sites and the library community as a whole. SHERLOC provides a simple search interface to allow users to locate shelfmarks, facilities and subject collections within the library. The need for this tool was confirmed by user studies, showing that location of material and facilities was the most common request received at all partner sites. This tool was demonstrated at Libtech 99 and was tested in all partner sites. The software was implemented at the LBS and the concept implemented at the LSE. It is available for guest access on the legacy web site: <http://www.headline.ac.uk/sherloc/sherloc/>.

End-user Electronic Document Delivery

A 'discovery-to-access' component was developed by HeadLine to facilitate access by remote users to library content held in print-only form, inter-operating with the RLG Ariel software which is widely used for 'scan-on-demand' delivery between libraries, such as the Lamda Consortium in the UK. Following a trial service to users from a single library, EEDD was piloted between three Lamda Consortium members, and was cited as an essential element of a proposed new national document access service which has been granted JISC funding.

Dissemination and Communication with the library community

Almost every person directly associated with the project has been involved in representing HeadLine in some way in national and international events or publications for the communities of library providers and academic library users. This has brought the dual benefits of promoting the project's view of how library services will (or should) develop, and hearing alternative views and ideas. We also endeavoured to keep in touch with developments in the wider field of e-commerce and Internet-based portal services. Although this activity consumed significant amounts of project resources, we regarded it as essential to ensure that the developmental strands of the project were continually steered by relevant external forces in these rapidly-moving fields.

2. Learning from the process of implementation

2.1 *Difficulties encountered*

User data

In the original Project Plan and Phase 1 Technical workplan we stated that MIS data would be used as the basis for user profiles and enabling the system to 'know' what the user is entitled to access. MIS administration at each partner site has made this hard to achieve as it is technically difficult to extract, and also, as this is sensitive information, it is not easy to get access to this data. We changed our approach and defined the requirements of a HeadLine system by building our own 'model' MIS on a relational database, using this in development of other system components, and planning subsequently to use it to define a 'view' to map the connections between HeadLine and real instances of institutional MIS. We have had some success in connecting the authentication broker 'live' to operational institutional directory services. The authentication broker has now been adopted as the authentication mechanism for other web services at the London School of Economics.

Continuously emerging requirements of the HeadLine hybrid library model

Following the successful launch of the PIE at the partner sites and its promotion to the wider library community further requirements for the HeadLine hybrid library model (and hence the PIE and its associated software) continuously emerged. We were able to implement some of this additional functionality within subsequent PIE releases. However the project's resources were (of course) finite and hence there had to be a cut-off for software implementation (the end of January 2001). Requirements specifications and working papers were drawn up for proposed functionality that we hadn't implemented by that time. A couple of software 'bolt-ons' were developed following the software freeze. These are pieces of self-contained software that could be implemented into the final PIE release without any knock-on effects.

Institutional circumstances

Institutional circumstances caused some difficulties for the project, for instance the LBS library move in Summer 98, the UH library system change (from Libertas to Voyager) and the LSE library decant (Summer 99) and move back (Spring 01) all posed some challenges to the team, in terms of taking up staff time, altering working environments and changing systems that HeadLine used. Some of these factors also provided opportunities for HeadLine as described in section 2.4.

The timing of HeadLine deliverables and activities

Throughout the project's life-span we have had difficulties in timing project deliverables, evaluation and other activities to coincide with the demands of the academic year. PIE software was often ready for release at unsuitable times in the academic year. We found this problem impossible to solve and hence encountered problems with maintaining users interest in the PIE and with engaging them in evaluation activities.

Maintaining PIE users interest in the PIE

Increasing the number of return PIE users (from the project's partner institutions) has been a high priority, particularly during the final reporting period because the Second (final) evaluation phase required a larger pool of 'experienced' PIE users. Maintaining interest in the PIE has been extremely difficult throughout the project. Initially when the PIE is launched to a user group interest is high, however they fail to return. Whilst PIE publicity was found to encourage some return use, unfortunately it did not result in regular patterns of return use.

During the second phase of the evaluation the PIE was promoted to the target user groups through various media: emails and bookmarks at all partner sites; training sessions at the LSE leaflets ('Guides to using the PIE') at the LBS, an online guide for UoH users. All LSE student PIE users were invited to attend one of several training sessions, however the up-take was very poor (4 people). Following discussions with UoH it was decided that training sessions would not be appropriate for UoH PIE users (due to the time of year). A HeadLine stand at the LBS Finance Zone launch was potentially a good way of reaching LBS PIE users and providing them with information on how to use the PIE. The stand was postponed until mid July 2001 and so it was

not possible to achieve the aim of maintaining continued interest in the LBS PIE during the evaluation period.

Possible reasons for the lack of return use include the timing of publicity and training events, many students were busy with coursework, exams and revision at the time when we needed them to participate in our activities. Also, the PIE's slowness was often mentioned by users who participated in the Phase One evaluation. The PIE was not a core service at any of the partner sites during the evaluation period. We did not wish to make the PIE available to all users at the partner sites as this would have potentially overloaded the system. Hence it was not feasible to advertise the PIE via Library web pages. We had to rely upon users remembering to use the PIE. There are difficulties associated with running project software alongside mainstream library services. The PIE was in competition with existing well-established library services, such as each library's web pages which provide access to resources by subject.

Participation in evaluation activities

In addition to the successful evaluation of the wider library community's use of the PIE and their attitudes towards hybrid library functionality (see section 1.5 Major Successes), the Phase Two evaluation study also aimed to analyse 'experienced' users (the students at each of the partner sites) use of the PIE. It was to include a detailed evaluation of the end-user's perceptions and their ongoing usage of the PIE. Qualitative data was to be collected through the use of focus groups and structured questionnaires. An analysis of the quantitative data contained within the PIE logs was to inform on mature users level of usage of PIE functionality (e.g. the creation of shared pages) and level of resource (e.g. databases to which the library subscribes) usage.

The second phase of the PIE evaluation was extremely slow to progress mainly due to the time of year. The users were targeted with publicity (mentioned above) and invited to complete a set of tasks prior to completing a questionnaire. Unfortunately, despite incentives (Amazon book/music vouchers) only a few questionnaire responses were received from each institution: LSE (2) LBS (4) UoH (3).

Developing the Resource Description Model

The project team spent a considerable amount of time developing our Resource Description Model from a theoretical point of view. In retrospect, the project should have spent a shorter length of time on the theory and hence developed a working RDM at an earlier stage. The development of a RDM that meets the needs of the project's hybrid library system was an iterative process. Inputting resources into first version of the working RDM highlighted problem areas. A second iteration of the working RDM was developed, its release coincided with the release of PIE version 1.2 in the Autumn term 2000.

PIE Performance testing

Unfortunately due to the difficulties in recruiting users in the final phase of the project it was not possible to test as many performance enhancements to the PIE as we would have liked. However a requirements specification for a PIE Benchmarking test script was written: <http://www.headline.ac.uk/public/deliverables/benchmark.html>. It is likely that this work may be picked up by the current DNER projects.

2.2 Influence of other projects and the eLib programme

HeadLine has worked with other projects, particularly those in Phase 3 of the eLib programme. The Project Manager attended regular meetings with the 9 other project managers - these meetings kept the managers informed of what the other projects were doing, and provided mutual help and advice in areas of work (e.g. contacting information providers). Dissemination has frequently been undertaken in collaboration with other Phase 3 projects, e.g. talks, the joint eLib Projects exhibition stand at the Institutional Web Managers Conference held at Goldsmith's college, London and the jointly held end of project conferences. This interaction has proved beneficial to HeadLine, in terms of keeping up to date with hybrid library development, sharing resources and ideas and also sharing the work of dissemination (various managers representing the projects at different events, taking flyers from other projects to conferences etc.). The majority of activities that have been undertaken in common with other eLib Programme Phase 3 projects are detailed in the complete list of dissemination activities <http://www.headline.ac.uk/public/diss/disslist98-01.html>.

eLib Concertation days have also been very useful, again by maintaining contact with other projects and teaching about relevant initiatives in the UK and world-wide.

HeadLine has good relationships with the other 'e-library' projects based at the LSE (Decomate 2 and M25 Link) and these enabled sharing of some work and resources, shared dissemination activities and transfer of good ideas. HeadLine made contact with other relevant projects in Britain, Europe and other parts of the World with an interest or involvement in common with HeadLine. HeadLine communicated with the "MyLibrary" project based at North Carolina State University, specifically with the Project Manager - Eric Lease Morgan. HeadLine published an article on the PIE in the December 2000 issue of the American Library Association's Journal: *Information Technology and Libraries* (ITAL), for which Eric was the guest editor.

2.3 Changes made to HL plans and reasons for these changes

ROADS

The decision not to use ROADS was a major change to the project, as initially the project intended to use ROADS (as another eLib project) and to take advantage of the user-friendly admin interface. However extensive testing showed that the flat database structure was inadequate for recording multiple resource locations. The effect of this decision was that some time was lost due to installing and testing ROADS, then finding it to be unsuitable and having to start again with another database.

System-configuration of resources in the PIE

The project originally planned to implement system imposed configuration of resource presentation based on user behaviour, by retaining feedback based on user's actions. This idea became rather out-dated and the project decided not to implement this objective. User study findings suggested that users would prefer to be able to explicitly control the presentation of resources in their PIE themselves, rather than allow the system to impose changes based upon their behaviour. With regard to web-based portal systems the current thinking is that (as far as possible) the presentation of information should be customisable by the user.

Staffing

Changes were made to our plans in the areas of staffing -specifically with regard to the membership of the Project Team. These changes were detailed in the previous annual reports. During this reporting year the Project Board agreed to a proposal to fund an additional full-time Project Officer post for six months (as detailed in section 1.2.2).

End of project event

The project had originally planned to hold an end of project event towards the end of phase three. Plans changed and HeadLine participated in an end of project workshop event that was presented jointly by all five eLib Hybrid library Projects.

2.4 Unanticipated outcomes or results

The SHERLOC shelfmark and facilities locator proved more popular than expected. One unanticipated outcome was related to the library move at the LSE. The use of SHERLOC for the decant was a valuable test of the system and a way of getting it used and accepted within the LSE. SHERLOC was considered to be very useful for helping users (and staff) locate material in the temporary building housing approximately 3 million shelved items. The SHERLOC concept was incorporated within the LSE's Unicorn catalogue thus facilitating the library's move back to its redeveloped building.

The End-user Electronic Document Delivery service (EEDD) has been adopted for use by the Lamda Consortium in a multi-site document access pilot service commencing in August 2000.

2.5 What have we learnt?

2.5.1 Project Management Learning outcomes

We have learnt a lot about project management and administration. For instance we have learnt that interaction with existing institutional systems can be problematic and entail lengthy negotiations (e.g. the MIS data). In later stages we allowed more time for interaction with institutional systems and departments and also tried not to make anything that was developed for HeadLine too dependent on these external factors.

It is important not to be too prescriptive as to how aims should be achieved, we often found that it was beneficial to try out different methodologies from those originally proposed. We have learnt to be more realistic in our expectations and define what we want the outcome of each task to be. Particularly with development work it is easy for tasks to grow and become interminable if it is unclear when a task has been completed. This learning was implemented in detailed planning for Phases 2 and 3, when team members were asked to define new tasks, work involved in them, and to define what the outcome or deliverable would be, in a more controlled iterative process. Closer monitoring of the actual staff time spent on specific tasks (to gain feedback on our own estimates) was proposed at the planning stages of the project, but was not ultimately agreed by the whole Project Team. A similar monitoring method was proposed and agreed during our detailed planning of Phase 2, and was implemented. These measures ensured tighter controls on work, and enabled the team to know with more certainty when a piece of work had been completed.

With hindsight it was a poor decision not to have funded post(s) at the University of Hertfordshire, the project's largest test-bed. The funding of the additional project officer post (based at the LSE, but working for all partners) went some way to addressing this need, but it would have been useful to have had a funded post based at the UoH throughout the project's duration.

2.5.2 The development of the HeadLine hybrid library model

The user was the focus of HeadLine's hybrid library model from an early stage. Following the outcomes of formative user evaluation studies the model changed slightly from a user dependent managed environment to a Personal Information Environment. There then followed much unanticipated excitement (within and outside of partner institutions) about the concept of a 'PIE' and consequently the project focussed more on the PIE development than had originally been planned.

2.5.3 Learning from the process of operationalising HeadLine deliverables

We have discovered that although open source software developed by previous eLib projects can be useful it may not necessarily be adequate for our needs, so adequate time must always be allowed for testing and implementation of software.

In the process of implementing successive software releases and deploying services for large numbers of academic users, we have learned in particular that additional time and effort are necessary for end-user support, and promotion of service take-up in this environment, even compared with the deployment of commercial systems of similar complexity. This may possibly be a negative effect of the perception or valuation by end-users of a product or service which they receive "for free" (as opposed to a product or service for which they pay for directly).

Each of the project's partner institutions (and no doubt each UK HE institution) has different hybrid library requirements. This relates to different user types, but also to institutional culture and existing staffing and service provision structures. One size of hybrid library is unlikely to fit all. The modular nature of the HeadLine software has been extremely beneficial, institutions are able to pick and choose which combination of HeadLine services to implement.

We have learned not to under-estimate the time and effort needed to transfer the maintenance and support of such services from specialised project staff to 'mainstream' library or IT support staff. Operationalising HeadLine deliverables and embedding them within mainstream services is not an easy process even at partner sites. Staff resources in HE libraries are always going to be at a premium. Finding staff with the time and skills to implement project results and integrate them in to mainstream services is bound to be a problem, once project funding has ceased.

It has been relatively easy for LSE and LBS to operationalise HeadLine services as they have been able to utilise the expertise of their technical staff involved in HeadLine. The University of Hertfordshire did not have any in-house staff with HeadLine technical expertise. They have certainly benefited from HeadLine learning outcomes, but are unlikely to incorporate the HeadLine software within their core services without additional staffing resources being made available and funded externally.

SHERLOC and the Resource Finder database are perhaps the easiest pieces of software to implement. They stand on their own and perform specific tasks, solving problems common to many HE institutions. SHERLOC enables the user to find shelved resources (and facilities such as photocopiers) through the provision of maps. The Resource Finder is a database of electronic resources, which can sit behind a web front-end that enables the automatic listing of resources (such as journals, or bibliographic/full-text databases) by subject and alphabetically by title.

It takes a matter of an hour or so to train library personnel either in the use of the administrative interface to SHERLOC or in the administration of PIE pages. The administration of PIE resources contained within the RDM has been through the use of MS Access². Training library staff in the administration of the resources is more time consuming, taking a few hours. The trainee needs to learn about the structure of the database, what information needs to be put into which tables and fields, and how to use MS Access firstly to access the RDM database and then to maintain the resources. Training library staff in the maintenance of the Resource Finder takes approximately one hour.

It takes approximately twenty minutes to train end-users in the use of the PIE and SHERLOC. If hands-on is to be included then an additional fifteen to twenty minutes is required.

² See the guide 'Editing the HeadLine Resource Database using Access and Administering Resources in the PIE' <http://www.headline.ac.uk/public/deliverables/1-2rdb-pieinput.pdf>.

3. Final evaluation results

3.1 *Evaluation activities and reports*

The project's evaluation activities are detailed below, references to reports are included. Details of conclusions made following the Phase One and Two PIE evaluations are included towards the end of this section.

Spring 98: Evaluation of resources in sites, standards available and licensing agreements

Resources in partner sites were examined extensively and a database of resources with vendors, technical requirements, access policy etc. were produced. Resources were prioritised for inclusion into the HL service, this was undertaken in consultation by subject experts in partner sites. The main documents produced in this area are:

- Consolidated list of resources:
<http://www.headline.ac.uk/public/wp2resources/Wpresourceslist.html>
- Framework and Criteria for Prioritising Resources:
<http://www.headline.ac.uk/public/wp2resources/Priority.html>
- Resource Analysis & Classification
- Identification of grey literature resources:
<http://www.headline.ac.uk/public/wp2resources/GreyResources.html>

Standards available for use in the project were examined by various team members. ATHENS was reviewed as a standard for authentication, in conjunction with HeadLine's authentication needs. This was written up in Jonathan Eaton's contribution to the article "Realizing the Hybrid Library" jointly authored by all Phase 3 hybrid library projects for D-Lib Magazine (October 98).
<http://mirrored.ukoln.ac.uk/lis-journals/dlib/dlib/dlib/october98/10pinfield.html>.

ROADS was evaluated as a database for HeadLine's resources, and a prototype ROADS database was installed in two of the partner sites as part of this activity as explained in section 2.3. The document: 'Assessment of ROADS as HL Resource classification'
<http://www.headline.ac.uk/public/wp2resources/roads.pdf> was produced.

Standards at partner sites were assessed so that the system would be able to work at all of them. Technical requirements for all resources were also measured as part of this task, and an ideal specification for the HL system was formulated.

Licensing agreements were extensively examined for resources at partner sites. Current 'model licence' initiatives were also studied and a model licence for the HeadLine system was devised
<http://www.headline.ac.uk/public/m-licence.html>. This licence was based around the general model licences available (particularly the NESLI licence).

Summer 1998: Evaluation of desired content of HeadLine

The resource analysis work included looking at grey resources and course materials (such as reading lists and teaching material). This activity also included looking at sources available to users and those used. Analysis of log files to see the most popular resources accessed by users, was superseded to a degree by Resource Prioritisation which (in conjunction with library staff) looked at how popular resources were, as well as how easy they would be to incorporate into the system.

Analysis of potential users took place, and reading lists and resources available and were analysed in Workpackage 2 'Resources'.

Autumn 98: Recruitment of user panel and studies of user needs, views, existing use of services

Investigation of user requirements of the system was performed using the Analysis of Information Desk Enquiries work and the Staff Consultation Event which supplemented this research to

identify typical enquiries that users want answering, user needs and preferences and patterns of working. These showed user needs by measuring frequently asked questions at all sites; also the Staff Consultation Event provided an insight into user requirements and current use of services.

December 98: Review of year 1

This was fulfilled by the completion of the **Phase 1 Evaluation Report** <http://www.headline.ac.uk/public/p1-eval.pdf>, which reviews the first phase of HeadLine (January 1998 - February 1999). NB this was delayed to the end of Phase 1 and was produced in May 99.

Spring 99: Evaluation of hybrid library model, i.e. integration of components - testing by library staff, academics and users

Although changes to the project plan have meant that the HeadLine system was yet not launched, some testing of component parts was undertaken by library staff at partner sites (particularly for the SHERLOC resource locator).

Summer 00: Evaluation of the hybrid library model

The results of the first stages of the summative evaluation were based upon the launch of the PIE to end-users at each of the partner sites. The following reports on the launch of the PIE were written:

- Report on the May 2000 launch of the PIE at University of Hertfordshire and the planned launches at London Business School and London School of Economics: <http://www.headline.ac.uk/public/diss/headlinelaunchreport-600.pdf>.
- Report on the July 2000 launch of the PIE at London School of Economics: <http://www.headline.ac.uk/public/diss/LSE-LR-072000.pdf>.
- Report on the August 2000 launch of the PIE to the Institute of Finance and Accounting at London Business School: <http://www.headline.ac.uk/public/diss/ifaustlaunch.pdf>.
- Report on the September 2000 launch of the PIE to Masters in Finance students at London Business School: <http://www.headline.ac.uk/public/diss/miflaunchreport.pdf>.

Spring and Summer 01: Evaluation of the hybrid library model

The final stages of the summative evaluation were reported in the following two reports:

- **Report on the results of Phase One of the Personal Information Environment Evaluation Programme.**

<http://www.headline.ac.uk/public/Phase1eval.pdf>

A summary of the conclusions made in this report:

The demand for access to library resources from off-campus locations is strong. Personalised library portals, such as the HeadLine PIE, can help to facilitate resource access, with the ultimate aim of enabling seamless access to resources regardless of the (authorised) user's location.

It was disappointing that, overall, the frequency of PIE usage had been quite low, but encouraging to see that those users who had been trained on the use of the PIE used the PIE more frequently than those who hadn't received training. Competition with existing library services (such as the LBS' Forum, and the subject pages provided by the UoH and LSE libraries) was identified as a potential issue. The results of the phase one questionnaire survey indicated that the PIE is not very easy to use by those who haven't received training. It would be desirable to redesign of the PIE's interface to make it more intuitive and user-friendly, and to improve performance speed. [Unfortunately there were not sufficient resources available for us to do this within the project's time-scale.] The report recommended increased promotion of the PIE to target groups and further training in the use of the PIE at the partner sites to increase the frequency of return use.

The statistics on resource usage indicated that the PIE provided access to a broad enough range of resources for its users. The PIE's provision of restricted resource locations (e.g. those that are only available from within the campus IP range) was an issue identified for further investigation. It would be useful to find out whether users would like the PIE to include an additional personalization function -- one that enables them to select whether or not the PIE should display resource locations not available to them from their current location.

The Phase One report also recommended that the Phase Two evaluation should investigate:

- Which aspects of the PIE interface and PIE performance could be improved.
- The extent to which competition with existing library services influences the level of PIE usage by target groups at each institution.
- Whether PIE page usage changes as users become more experienced. For example, once users have their prime resources located on their default pages (through adding them from "subject" pages, the "All resources" page and from search results lists) does their use of subject pages decrease? Of course, this may depend on the type of user (researcher, academic, undergraduate student, etc.).
- The types of searches that PIE users perform, the range of search functionality used and the usability of the PIE's search interface.
- **Report on the results of Phase Two of the PIE Evaluation Programme: the evaluation of the Guest User's use of the PIE and their attitudes towards hybrid library functionality.**

<http://www.headline.ac.uk/public/ph2guestreport.pdf>

The main conclusions made by the Phase Two report are as follows:

Phase One of the HeadLine PIE evaluation outlined some of the areas that required further investigation some of which were then included in the Guest PIE Questionnaire. The Phase One evaluation concluded that both the design of the PIE interface and its performance speed were issues that needed addressing and so questions in the Guest PIE Questionnaire aimed to assess whether or not users from the wider library community also experienced problems with these features and how they thought they could be improved. Although the final evaluation was intended to include feedback from both guests and experienced student users of the PIE, the results of Phase Two rely predominately on guest responses to the questionnaire. However, information gathered from student users during the First Phase of the evaluation, will still serve to inform how the PIE could be developed in the future.

The results of the Guest questionnaire show that the PIE has stimulated a significant degree of interest amongst the wider library community. However, the PIE failed to attract frequent visits and usage by guest users. Library professionals, working on similar projects, visited the PIE to view its functions and features, but did not return to it more than a few times overall. However, guest users are possibly less likely to become frequent users of the PIE because their reasons for using it would be different from those of students. It's probable that many of the respondents were accessing the PIE in order to make comparisons with other projects or to assess how well certain functions work.

Like the student users in Phase one, the Guest users also found that the main areas in need of improvement are the PIE interface and the response times. It necessary for the response times to be quick otherwise users will become frustrated and perhaps turn to a different service. The interface needs to be far more accessible, although help pages can assist with navigation, users want to be able to search for and access information with minimum distraction and inconvenience. Several respondents offered specific ideas on how the PIE could be improved, including: more intuitive navigation and interface design (particularly the provision of the PIE interface in other languages), the provision of holdings information within search results and document request facilities. These ideas will help to inform the development of future hybrid library systems.

Users were asked whether they would like the PIE to include any of a list of additional functions. The most popular function was 'seamless access', almost ninety percent of guest users would like to see seamless access implemented (so that once the user has logged into the PIE they can then access password-protected resources without having to remember and input further usernames and passwords). Document delivery was the next most popular function (56%) followed by parallel searching, merged/de-duplicated search results sets and current awareness services (each 50%); reference linking (44%), export search results (e.g. to bibliographic software), import links and search web-search engines (each 39%), export links (33%) and lastly, threaded discussion/chat area (11%).

It was interesting that the guest users did not see threaded chat within PIE pages as being a high priority function. 'Group-working' functionality is perhaps straying from what (users think) is 'library territory'. PIE users are able to share pages with other PIE users, none of the guest users had done this (perhaps none of them knew another PIE user) and only a few student users had done so. The results of the phase one and two questionnaire surveys indicate that an appreciation of 'group working' functions by all PIE users appears to be limited. This is possibly due to a lack of critical mass of PIE users. There has to be a large number of any type of users in order for there to be users with shared interests.

Several respondents suggested that a hybrid library system such as the PIE could be integrated within existing library services. Also, one respondent thought the PIE would be useful as part of a Managed Learning Environment (MLE). The two services, operating together, could provide full online access to learning and information resources. Organisations outside of Higher Education could also benefit from the PIE; a hybrid library system contained within their own institutional 'environment' (their intranet perhaps) would allow employees to access all they needed from one place. These organisations might also appreciate an MLE as many provide internal training programmes.

4. Future development

4.1 *The future scenario for the development of HeadLine outcomes*

HeadLine's hybrid library model was never intended to develop into an on-going service. We envisage that HeadLine's learning outcomes will be taken forward by the current DNER projects and by Higher Education institutions developing in house hybrid library and similar systems.

There is currently an enthusiasm within UK Higher Education for the integration of the hybrid library and the learning and teaching environment within a personal portal paradigm. Increasingly the MyLibrary concept is being incorporated within the institutional environment to create a 'MyUniversity'. John Paschoud's article "Making the PIE ...GEL" (Cultivate Interactive, May 2001, <http://www.cultivate-int.org/issue4/pie/>) describes this phenomenon. It looks at how the HeadLine hybrid library model 'could be broadened to encompass all the information needed by learners in higher and further education, and how the Authenticated Networked Guided Environment for Learning (ANGEL) Project will address these objectives'.

HeadLine deliverables and learning outcomes are already being built upon and implemented by other projects. For example the Authentication Broker will possibly form part of the SPARTA architecture. The HeadLine Resource Data Model architecture will become the basis of ANGEL's Resource Manager component).

4.2 *Institutional Plans for HeadLine Developed Services*

Each of the project partners has already operationalised at least some of HeadLine's learning outcomes and deliverables (see section 1.1.2). This is one of the benefits of the module-based development strategy of the project; results can be utilised in stages, avoiding the need for a "big bang" approach. The institutional plans for post-project exploitation of HeadLine learning outcomes and deliverables are detailed below.

4.2.1 London School of Economics

Discussions have begun on an institutional strategy for implementation of the outcomes of a range of projects, including HeadLine. The need for a clear institutional strategy is recognised, to avoid an over-ambitious, unsustainable implementation, at one extreme, or the loss of potentially valuable project results, at the other.

The Personal Information Environment (PIE), perhaps the most high-profile HeadLine product, was launched to LSE academics and researchers in the Economics Department in mid-July 2000 and to groups of undergraduates in October 2000. Feedback was extremely positive and the results of these pilots will inform decision-making on utilisation of the PIE in mainstream LSE Library services.

Given the popularity of portal-type personalised information provision, it is highly likely that the existing LSE EASI (Electronic Access to Subject Information) service, will be enhanced with PIE type functionality. As mentioned earlier, the plan is to replace the EASI database with the HeadLine RDB in the short term, and to up-grade the web interface to electronic resources using ideas and learning outcomes from the development of the HeadLine Personal Information Environment in the long term. Other departments within the LSE, notably Management Information Services (MIS) are investigating personalised Web access for students; HeadLine developments in this area are ahead of the field and likely to be adopted on an institution-wide basis.

Following further HeadLine user studies, it is envisaged that additional HeadLine deliverables will be used to support and expand mainstream LSE Library services, across subject areas. HeadLine products should provide the key to management of an increasingly complex hybrid library environment.

4.2.2 London Business School

The Library plans to carry on using and developing the HeadLine services already in use. Journals Finder in particular has proved to be a popular service with faculty, staff and students. In

addition London Business School Library was recently awarded RSLP funding to develop services to increase the availability of historic company reports to H.E. researchers. This project intends to investigate the potential of the HeadLine developed EEDD (End-user Electronic Document Delivery) service to deliver copies of company reports to remote users.

London Business School is currently planning a replacement of its teaching and learning platform. Access to and presentation of library services form an important part of this project. Elements from the HeadLine model likely to be used include the ability for users to customise their own resource lists by selecting resources of interest to them and adding and sharing their own resources. It is also hoped to implement the cross searching functionality developed by the project. Feedback from the evaluation of the HeadLine PIE can be used to assess the potential of this software for wider deployment to the library community.

A major benefit of the HeadLine project to London Business School has been the opportunity provided to library staff to gain familiarity with a range of technologies including UNIX and SQL and to use these tools to develop database driven library management services customised to local requirements.

4.2.3 The University of Hertfordshire

Current arrangements for the provision of the HeadLine product at UH

Presently the HeadLine software and necessary hardware to run it are located at LSE. The generation and maintenance of individual user accounts to enable designated cohorts at the University of Hertfordshire to access HeadLine, has been administered by project staff at LSE. Technical expertise on setting up, developing and managing HeadLine currently resides at LSE and LBS. The University of Hertfordshire has advised on the development of the front-end of the HeadLine user interface, and its functionality. UoH has also provided a large test bed of Undergraduate users for the HeadLine product.

Future arrangements: evaluation of feasibility of implementing part or all of the HeadLine product at UoH

Prior to making a decision on implementing the HeadLine PIE (or parts of it) at UoH post-project, an evaluation of how transferable the HeadLine product is to the existing IT infrastructure at the University of Hertfordshire will be required. A further consideration will be how HeadLine or parts of it, fit into the development of a university wide Managed Learning Environment (MLE), and how it might overlap with other systems for information resources delivery and management eg. My OPAC. To enable this evaluation to take place UoH would require technical support and advice from the HeadLine Project team, and in particular the software developers.

To inform the decision on how to take HeadLine forward at the UoH it will be necessary to review the outcomes of the user evaluation studies that occurred in the final phase of the project and to review what added value the enhancements to upgrades of the software provide.

Unless there is a large measure of direct transferability between existing UoH systems and HeadLine, it is unlikely that the HeadLine PIE could be incorporated as a substantive ongoing service at UoH, without additional staffing resources being made available and funded externally.

Options for implementing HEADLINE post project

OPTION 1

LSE to continue the current arrangements of maintaining the HeadLine software to support UoH on the LSE server and to continue to generate and administer the required user accounts. This would mean that there would be no loss of the HeadLine service to current users at UoH in the post project period, it would also enable more detailed post project user evaluation of the total HeadLine product.

OPTION 2

Initially LSE to continue the current arrangements, with a view to transferring some or all of the HeadLine software to UoH systems. A collaborative evaluation as outlined in '**future arrangements**' above would need to be made, prior to the implementation of HeadLine (or parts of it) at UoH. This option fits well with the post project proposal to evaluate the process of

'Operationalising the PIE' and hence providing more informed advice and support to other HE institutions wishing to implement it.

OPTION 3

UH to discontinue offering the total HeadLine product at the end of December 2000, but to investigate integrating SHERLOC into current information provision as a local resource locator tool. This option could be interwoven with either OPTION 1 or OPTION 2, or investigated separately.

(Former) HeadLine staff based at the LSE will continue their relationship with UoH, and will help them with practical advice and discussion of what they can implement and how, within available time.

4.3 The HeadLine Exit Strategy

Since November 1999, the exit strategy and related issues were considered at the Project Board on a number of occasions. As the project has developed, a number of issues relating to exit strategies became clearer. The Project Board summarised the different options as follows:

Option 1: Zero option.

This can be regarded as the minimum that will be done. It is not an inconsiderable achievement, however, as the HeadLine products will be packaged and made available, with documentation, to other HE institutions by the end of the project.

Option 2: HeadLine as a learning experience

This option has already been largely achieved through HeadLine's extensive dissemination programme, both individually and in conjunction with other JISC-funded projects. There has also been some degree of transfer of knowledge and skills within partner institutions, although this has been variable.

Option 3: Project extension/follow-on funding

Project partners have not attempted to acquire follow-on funding for HeadLine as a project. It was felt that the project had achieved its major aims and objectives within the given funding.

Option 4: Connecting HeadLine results into mainstream services

This is potentially the most useful option for project partners, but also perhaps most problematic. The modular nature of the HeadLine products is a benefit in this, as partners (and other HEIs) can pick and choose which parts of HeadLine they integrate into their existing services. One lesson of the project, however, is that different institutions want to package and provide hybrid library services to their users in quite different ways. There is also the issue of availability of staff resources to carry out the necessary tasks to embed HeadLine products into mainstream services. A summary of the partners' institutional plans for implementing HeadLine was provided at the November 2000 Steering Committee meeting.

Option 5: Sale of software products

The Steering Committee and the Project Board agreed that this would not be a recommended option. During the three year period of the project, commercial companies have been working on some of the same areas and developing, particularly portal technology similar to the PIE. The LSE experience of an agreement with a commercial company for the Decomate 2 software provided a number of lessons. One was that a commercial company is unlikely to pay for such software, but only agree to maintain and develop it for the future. The Decomate experience also showed that a significant amount of management time is required to negotiate such a deal and that considerable effort and legal advice is needed to ensure that partners' rights in the software are maintained. Such management time was not available within the project partners and they agreed that there was no obvious benefit to them of such an agreement.

The Exit strategy was agreed at the Steering Committee meeting (23.5.2001). It comprises elements from options 1, 2 and 4. The project has packaged its products and made them available on an open-source basis to the wider library community (via the legacy web site). The availability

of HeadLine products has been publicised to the wider community, through the use of relevant email lists.

A considerable amount of learning has been provided through the Project's extensive dissemination programme. There has been a transfer of knowledge and skills between partner institutions and between HeadLine and similar projects. The Project's learning outcomes have been fed into new projects (for example ANGEL based at the LSE) and are being used to further develop existing services such as SPARTA. This final report includes a full record of lessons learned, successes and failures. HeadLine learning outcomes have been embedded within each of the project's partner institutions from an early stage and the process of embedding is on-going. This final report also includes a statement of project deliverables. The Steering Committee recommends that the JISC give due consideration to possible post-project exploitation of these deliverables.

4.4 Issues that merit further investigation by the JISC or other bodies

The project has attempted to address many issues important to the provision of resources and services by HE libraries, specifically: resource management, authentication and authorisation, collection level metadata issues. We are pleased that these are strong themes in the next programmes to further develop the DNER.

HeadLine has participated in joint dissemination activities which have been highly successful, both for the delegates and the project involved. We would recommend that the JISC should continue to actively encourage and support this type of activity amongst its projects.

We have included a clear statement of the project's outcomes within this final report (sections 1.3 and 1.4). This statement should enable the JISC to form an opinion on whether it would be useful to further exploit any of these outcomes (perhaps commercially). The JISC/DNER Copyright and Licensing Guidelines (as yet unpublished) are welcomed and have been adopted as good practice by the Project Board. The project will adhere to these guidelines and to the condition that funding is made available on condition that HeadLine products will be made available free of charge to other UK HEIs and FEIs, providing that the role of the HeadLine project is acknowledged in any further publication of such products.

The Steering Committee and the Project Board recommend that in the light of the JISC copyright guidance it would be useful to protect the HeadLine products for further exploitation, if the JISC agree that this would be worth doing. LSE, on behalf of the partners in the HeadLine Project and of the JISC will seek to protect ownership rights in case of future commercial exploitation of the HeadLine (and other similar project's) software.

5. Project finances

The table below presents the **draft** balance sheet for the current (last) financial year of the project, and summarises the overall grant income from JISC and finalised expenditure in the three previous financial/reporting years covered by the project.

HeadLine	JISC Grant (1997-2000)	Expenditure from previous project-years			FY 2000-01 (final) Out-turn		(against JISC grant)		Total JISC Grant Funding	Total Actual Expenditure
		1997-98	1998-99	1999-2000	Anticipated	JISC grant	Actual	Variation		
Staffing		£ 34,512	£ 90,459	£ 85,914	£ 39,478		£ 71,422			
Travel & subsistence		£ 2,587	£ 742	£ 1,617	£ 833		£ 1,911			
Publishing & dissemination		£ 1,410	£ 1,499	£ 2,159	£ 2,500		£ 1,297			
Recurrent subtotal (b/fwd from 1999-00)	£ 242,692	£ 38,509	£ 92,700	£ 89,690	£ 42,811	£ 43,228				
Additional JISC grant (for MetaLib study)						£ 30,401				
Equipment & software		£ 6,341	£ 10,479	£ 572	£ -		£ 1,049			
Capital subtotal	£ 26,000	£ 6,341	£ 10,479	£ 572	£ -	£ -	£ 1,049	£ 1,049	£ 26,000	£ 18,441
Total	£ 268,692	£ 44,850	£ 103,179	£ 90,262	£ 42,811	£ 78,629	£ 75,679	£ -2,950	£ 316,920	£ 313,970
								final underspend: -£ 2,950		

It must be noted that, in order to prepare this report by the closing date of the project, the final year expenditure figures (and therefore the final out-turn) are based on **provisional estimates only**, subject to confirmation of year-end adjustments that may be made by the Finance Officer of LSE to take account of delayed payroll cost adjustments in particular. Finalised accounts for the project will be submitted to JISC and this data will be updated in online versions of this report as soon as this information is available.

Anticipated expenditure shown was calculated for the originally agreed and funded final part-year of the project (August 2000 to January 2001). Following agreement by JISC of the proposal to extend the original objectives and timetable of the project until July 2001 (without additional grant funding), and the request by JISC for LSE staff of HeadLine to undertake the additional study of MetaLib/SFX (supported by additional grant funding of £5,000), budgeting for the revised full financial year 2000-01 was based on the total of the original grant for the part-year (£43,228), the additional grant for the MetaLib/SFX study (£5,000), **and** the accumulated underspend (£30,401) carried forward (with prior JISC approval) from previous years of the project. In order to clearly show the balance of income and expenditure in the final year, this amount of £30,401 is therefore 'double-counted' because it is also included in the total JISC grant shown for the years 1997-2000.

Virements (totalling £7,559) from capital to revenue budgets were also agreed with the approval of JISC, because some equipment was purchased later than originally planned. The primary reasons for this, and the more significant underspends on staffing costs, were unanticipated gaps in staff cover of posts at LSE and LBS.

In common with other projects involved in the JISC eLib Hybrid Libraries (Phase 3) Programme, transaction details in the financial records maintained by the LSE for HeadLine will show expenditure on various joint dissemination activities, for which HeadLine acted as the financial 'host', with corresponding 'income' shown where cost shares were subsequently recouped from other JISC projects or other organisations involved in these events. Such collaboration and cost-sharing by projects in the programme reduced the overall costs of dissemination below those anticipated in the HeadLine project proposal, with (arguably) beneficial effects on the overall impact of dissemination to organisations and individuals outside the programme.

6. Summary of lessons learned

6.1 *Lessons Learned from the development work of the project*

An iterative project development process has been useful. We have learned that it is important not to be too prescriptive as to how aims should be achieved. We often found that it was beneficial to try out different methodologies from those originally proposed. The project has found that demonstration is better than explanation. Pete's PIE (the PIE demonstrator) successfully led the development of the PIE interface and functionality.

We have learned not to underestimate the time and effort required to transfer the maintenance and support of services from specialised project staff to mainstream library or IT support staff. Integrating project results into mainstream services at partner institutions is important. Close liaison between project and mainstream staff is necessary from the start to ensure that project deliverables meet the library's needs and that there is a well thought out plan for embedding deliverables and learning within the library's core services. Operationalising HeadLine deliverables and embedding them within mainstream services is not an easy process even at partner sites. Staff resources in HE libraries are always going to be at a premium. Finding staff with the time and skills to implement project results and integrate them in to mainstream services is bound to be a problem, once project funding has ceased.

The decision to develop the software in modules has been extremely beneficial as it has enabled institutions to pick and choose which parts of the HeadLine model to implement. Each of the project's partner institutions (and no doubt each UK HE institution) has different hybrid library requirements. This relates to different user types, but also to institutional culture and existing staffing and service provision structures. One size of hybrid library is unlikely to fit all.

We have discovered that although open source software developed by previous eLib projects can be useful it may not necessarily be adequate for project needs (as we found with ROADS). Hence projects should allow adequate time for testing and implementation of software.

6.2 *Lessons learned from the management of the project*

The project organised an away day very early on, this involved project team members and other people from the partner institutions. It was extremely beneficial both as a team-building event and from the point of view of enabling the project proposal to be fleshed out at an early stage.

Projects due to their very nature can have staffing issues, projects have a limited time-scale and so they employ temporary staff. Staff recruitment can be difficult, especially when the project is nearing its end. Retention can also be an issue, staff may leave to take up permanent positions.

Regular meetings at all levels within the project (Team, Project Board and Steering Committee) have ensured that project work has moved forward in the right directions. A team mailing list (hosted by JISCmail, and formerly by MailBase) has been highly beneficial. It has enabled team members at all partner sites to liaise (and work in a virtual-office environment) between team meetings. The team list has also served as a useful way of 'documenting' and archiving team member's discussion of project activities.

Communication between the project and the wider library community has been made possible through the implementation of headline-users (also hosted by JISCmail) and other mailing lists, and through involvement in dissemination events. The HeadLine web site has been an effective tool for providing the public with access to information about the project. The Team web site has been useful for allowing team members password protected access to shared documents.

The management of the project would have been easier had there been at least one funded post at each partner site. The University of Hertfordshire was the project's largest test bed. With hindsight it would have been useful to have had a funded post based at the University of Hertfordshire from the start of the project to support HeadLine products and services.

6.3 *The impact of the eLib Programme Office on the project*

The staff of the eLib programme office have been very helpful in offering dissemination guidelines and advice and in acting as co-ordinators for a number of inter-project events. The training and

concertation days organised by the eLib Programme Office have been very helpful by enabling us to maintain contact with other projects and teaching about relevant initiatives in the UK and world-wide.

6.4 The project's contribution to the development of the DNER

Several of the project's outcomes will be of use to the future development of the DNER, these include research outcomes and deliverables:

- **Authentication/Authorisation** research and the HeadLine Authentication Broker.
- **Collection level resource metadata** research and the development of the HeadLine Resource Data Model, which can be use by a single institution/service or shared between more than one.
- **The personalisation of library services:** specifically the development of the personal portal interface paradigm as a useful model for the hybrid library.
- **Single-sign-on:** research into seamless access to password-protected resources and services and access to these resources and services via a uniform interface.

6.5 How can institutions not involved in the project be assisted in taking up its lessons?

The Project Board recommends that where a project is intended to produce working products, some continuation or interim funding should be provided to enable project partner institutions to obtain the maximum benefit by implementing them into their service provision.

JISC should fund an advice centre and/or other resources to assist HE institutions that were not involved in the project to get the most out of project outcomes and deliverables. HeadLine has developed a universal model of the hybrid library which could potentially be implemented either in part or in full by any UK HE institution (with sufficient resources). Many HE institutions have expressed an interest in HeadLine deliverables, but they will undoubtedly require support in order to implement them. Just as institutions that purchase commercial systems of similar complexity to the HeadLine PIE require support from the manufacturer.

Appendix 1 - Dissemination Achievements - August 00 - July 01

Date	Event	Name	Details
01-Aug-00	Article	LSE Library Annual Report	A short article was submitted to the 2000 LSE Library's Annual Report. This provided a description of the phase Three Tasks - the launch and evaluation of the PIE, and a summary of planned future developments.
17-Aug-00	Meeting	FATHOM meeting, LSE Library	Ben Wynne demonstrated the HeadLine PIE in his presentation on services that are being developed by library projects. Anne Gambles demonstrated the PIE to interested individuals who attended the meeting.
29-Aug-00	Talk	Demonstration of the LSE PIE	Anne Gambles ran a half hour session in which she demonstrated the LSE PIE to LSE Information Services staff. Attendees were shown how to use their PIE and were able to practice customising their PIE pages.
10-Sep-00	Conference	Digital Resources in the Humanities	HeadLine sent 20 flyers ("Autumn" 2000 newsletters), one A4 and one A3 poster for MALIBU's hybrid library projects display.
12-Sep-00	Talk	eLib projects based at LSE	John Paschoud gave a talk on the eLib projects based at the LSE Library - HeadLine, Decomate, M25 Link, and the new JISC funded project - ANGEL.
20-Sep-00	Meeting	Slovak visitors to LSE Library	Ben Wynne demonstrated the LSE PIE to a group of Slovak visitors.
31-Oct-00	Talk	HeadLine presentation at the University of Kent at Canterbury	John Paschoud gave a HeadLine presentation and demonstrated the PIE to Library staff.
31-Oct-00 and 22-Nov-00	Demonstration	Demonstration of the almost final version of the PIE	Anne Gambles demonstrated the almost final version (1.2 beta-test) of the LSE PIE to LSE Library staff.
01-Nov-00	Newsletter	HeadLine Newsletter: Autumn 2000	'The launch of the HeadLine PIE'. This newsletter reported the various launch events that occurred at the project's partner institutions, and on the launch of guest access. The development and pilot of the EEDD was described.
01-Nov-00	Conference	The future is hybrid: libraries in the 21st century. Held at the British Library.	John Paschoud gave a presentation: "2 million users? 2 million libraries!", The PIE was demonstrated to delegates attending the afternoon workshop. Each delegate was given a guest account and invited to try out the PIE for themselves.

Date	Event	Name	Details
02-Nov-00 and 03-Nov-00	Demonstration	The UoH PIE	Nick Goodfellow and other Library Staff at the University of Hertfordshire ran several information skills sessions in which they demonstrated the PIE to target groups of students.
25-Nov-00	Meeting	Singapore visitors to the LSE Library	Anne Gambles gave a presentation and demonstrated the HeadLine PIE, Decomate and M25 Link.
30-Nov-00	Conference	VERITY Conference on New Advances in Information Retrieval and Information Skills Development for Young People	Brian Kelly gave a talk on "New Approaches To Resource Discovery In The UK HE Community" in which he included some slides of Pete's PIE. Brian also distributed 50 HeadLine newsletters.
01-Dec-00	Journal	Information Technology and Libraries	Anne Gambles wrote an article: "The development and launch of the HeadLine Personal Information Environment" (Vol 19 (4) pages 199-205).
08-Jan-01	Article	HeadLine article in Library Update	HeadLine submitted an article and screen shot on recent news to Library Update.
20-Feb-01 and 27-Feb-01	Conference	'The future is hybrid: libraries in the 21st century?' Held at Manchester Metropolitan University and then at The University of Edinburgh.	John Paschoud gave a presentation: "2 million users? 2 million libraries!", The PIE was demonstrated to delegates attending the afternoon workshop. Each delegate was given a guest account and invited to try out the PIE for themselves.
01-Mar-01	Training session	The LSE PIE	Anne Gambles demonstrated the LSE PIE to EC202 students.
01-Mar-01	Journal	D-Lib Magazine	Anne Gambles wrote an article: 'The HeadLine Personal Information Environment - Evaluation Phase One' which appeared in the March 2001 issue, Vol 7(3).
01-Mar-01	Journal	Ariadne	John Paschoud wrote an article for Ariadne 'The filling in the PIE - HeadLine's Resource Data Model' (Issue 27)
02-Mar-01	Visit	Visit from Colin Lewis of the Ministry of Defence	Colin Lewis met with John Paschoud to discuss the PIE.
30-Mar-01	Visit	Visit from US Navy Librarians	Joan Buntzen and Maxine Reneker of the US Navy met with Anne Gambles to discuss the PIE and the December 2000 PIE user evaluation study. They were given a tour of the recently refurbished Lionel Robbins Library building.

Date	Event	Name	Details
11-Apr-01	Journal	Cultivate Interactive	John Paschoud wrote an article: 'Making the PIE GEL'. (Issue 4)
Late April and Early May-01	Training sessions	The LSE PIE	Anne Gambles and Imelda Noble demonstrated the LSE PIE to students and academics on target courses at the LSE.
09-May-01	Demonstration	EEDD Demo for NHS	John Paschoud demonstrated EEDD for Colin Davies (Deputy Director of Health Libraries - Information Technology, Northwest Health Care Libraries Unit), and other NHS people.
04-Jun-01	Visit	ARLIN visited HeadLine	Doreen Parker of the Australian Research Library Information Network Project visited John Paschoud to discuss the HeadLine project and its relevance to ARLIN (a project funded by the Australian Research Council involving the National Library of Australia and 19 Australian universities. The aim is to provide seamless access for research staff and students to Australian information resources. The first step is to develop a portal. The project is based at La Trobe University and is being implemented by a group of university librarians and IT directors.)
02-Nov-01	Workshop	Royal Dutch Academy of Science workshop	The Royal Dutch Academy of Science has invited HeadLine to give a presentation on personalisation, underlining the importance and complexity of user issues. John Paschoud will attend.