

**SUMMATIVE EVALUATION OF
PHASE 3 OF THE ELIB
INITIATIVE: FINAL REPORT**



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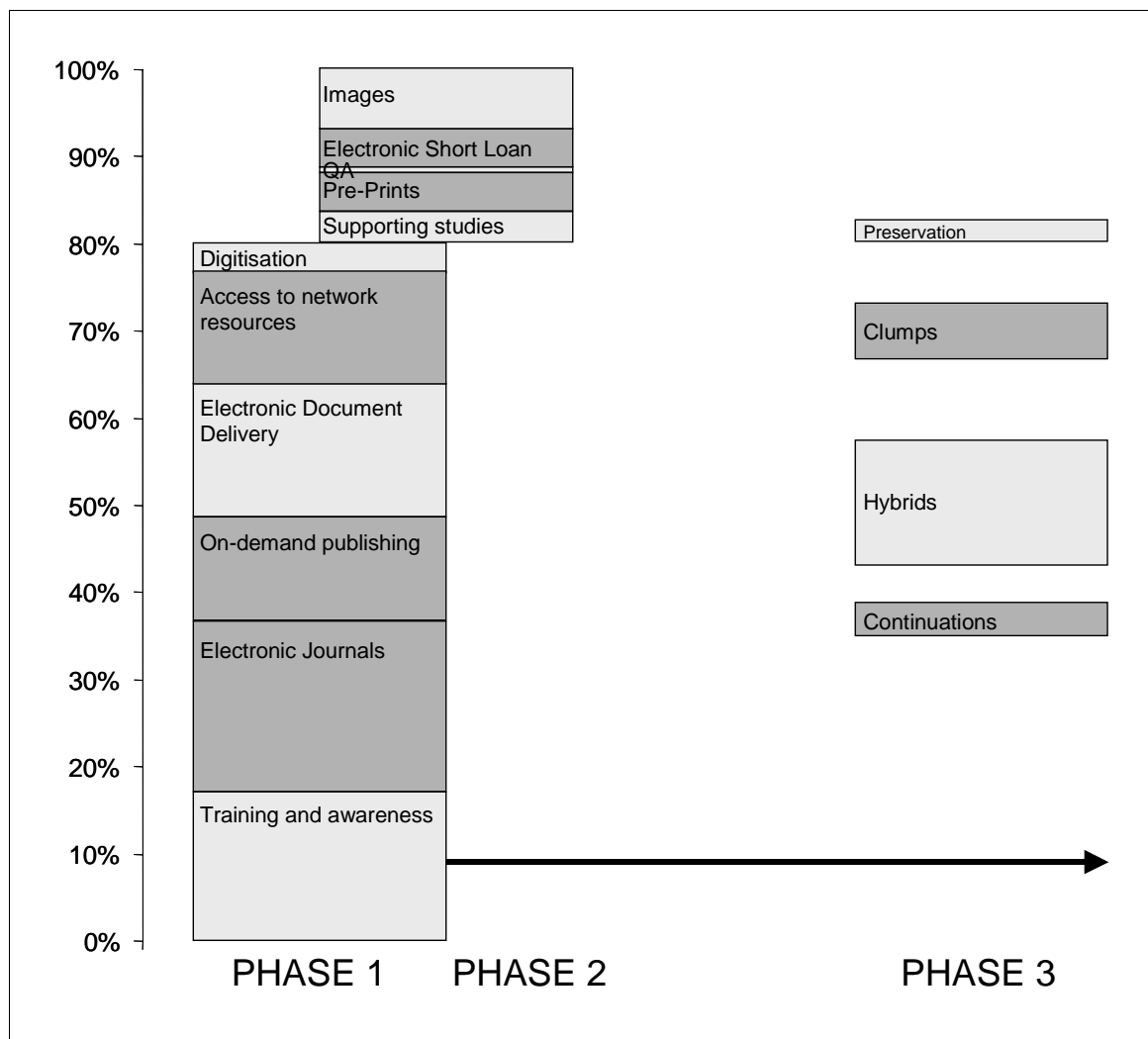
EXECUTIVE SUMMARY

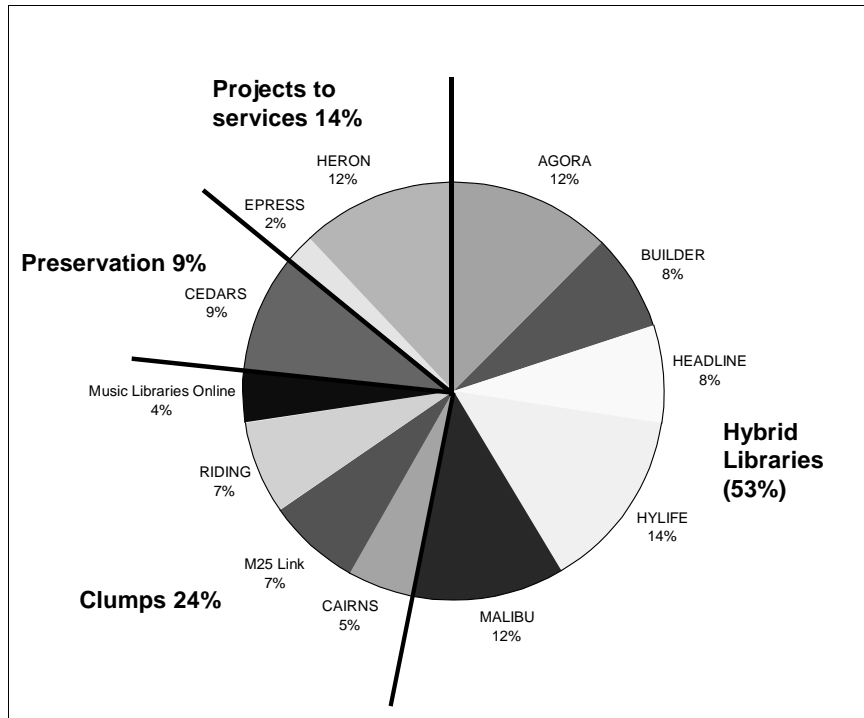
INTRODUCTION

This is the Executive Summary for the ESYS Summative Evaluation of Phase 3 of the eLib Programme, undertaken for JISC JCEI under Contract SC/JISC/605. It describes the main achievements of the Programme and presents the findings and recommendations from the evaluation.

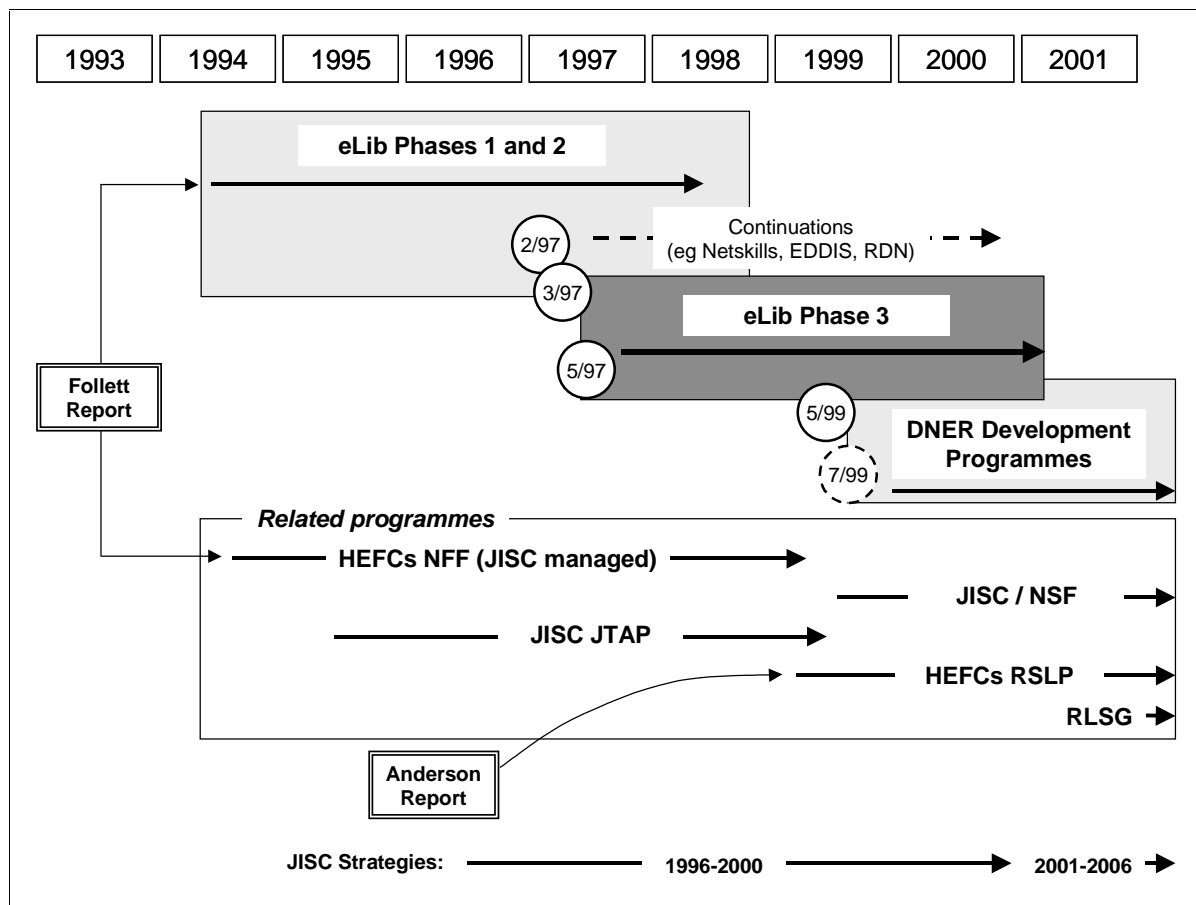
ESYS plc is a consultancy company which brings experience of undertaking and evaluating technology applications programmes in a number of fields, particularly space and defence. This evaluation therefore takes an independent view of the programme from outside the HE library sector. ESYS also conducted the Summative Evaluation of eLib Phases 1 and 2.

The eLib Programme consisted of three phases. Phases 1 and 2 together formed a successful £15M programme over a period of 3 years from 1994 to 1997. eLib Phase 3 was a £4.1M, three year programme which sought to consolidate this work in a practical context and to extend Phase 1 and 2 benefits by helping to achieve 'critical mass' in key areas. The transition from Phases 1 and 2 and the makeup of Phase 3 are illustrated in the following two diagrams.





The programme context for eLib Phase 3 is illustrated below.



ACHIEVEMENTS

The achievements of the different Programme areas are summarised in the following table.

Programme area	Total budget	Achievements
Hybrid libraries	£2,188,147	<ul style="list-style-type: none"> • Contributed significantly to knowledge of how hybrid libraries work in practice and their impact on various communities • Working models established by all 5 projects with positive evaluation. Wide range of content and functionality covered. • Enough diversity to allow the community to compare and contrast approaches • Clear evidence of institutional embedding • Some functionality built into commercial products • Influence on the design of the DNER • Forward links to MLE activities
Large scale resource discovery (Clumps)	£977,863	<ul style="list-style-type: none"> • Four working Clumps established • Made valuable progress on technical Z39.50 issues • Important work on organisational aspects such as collection level descriptions and access policies • Directly developed library cooperation • Evidence of effective exit strategies in that 2 major Clumps which represent a substantial fraction of UK HE have continued their work with self funding.
Digital Preservation	£370,000	<ul style="list-style-type: none"> • Tackled an important and difficult area of work • Made recommendations in the areas addressed • Provided a framework in the key area of cost models • Provided HE input to the broader debate on legal deposit of electronic materials • High profile project with a high level of external interest
Project continuations	£586,000	<ul style="list-style-type: none"> • Maintains the development of the On-demand publishing work • Many HE copyright clearances are now coming via HERON • HERON is addressing one of the critical issues in library provision - improving access to recommended study materials. • EPRESS has succeeded in developing a framework for the production of electronic journals.

FINDINGS

The findings of the evaluation are expressed in relation to four key questions which have been posed for the Programme. These are set out in this section.

Did the Programme supply sufficient added value to justify the allocation of JISC resources - did eLib Phase 3 provide benefits which would not have happened otherwise ?

1. eLib Phase 3 was a successful programme which has met most of its objectives and has had significant impacts for a programme of its size.
2. The allocation of JISC resources has been justified because eLib Phase 3 has applied emerging technologies to key operational issues in the HE library sector and thereby provided models and lessons which will inform future development. These findings have benefited the whole community through the extensive dissemination and evaluation procedures applied.
3. The emphasis in Phase 3 was more practical and service oriented than the earlier Phases and as a result the outcomes are of a more technical and detailed nature. These outcomes, despite a lower profile, are no less important or influential and would not have happened in this coherent form without the Programme.
4. Most of the Phase 3 outputs are in the form of pilot systems and greater understanding, in line with the programme objectives. Some projects did however start with implicit objectives to produce operational systems which were not realised within the project lifetimes.
5. Looking back to the original Follett objectives, there is still limited evidence of cost savings emerging from the work of eLib. Much of the work emphasised increased functionality, although some of the activities should lead to greater direct user empowerment which may produce overall efficiency gains. Phase 3 work in the area of electronic journal production, though small in scale, did produce measurable cost savings.

Did the adoption of a national, managed programme provide benefits compared to a more fragmented distribution of the funds to HEIs to pursue their own ends - was the right approach adopted ?

6. There were clear benefits in taking a coordinated approach to each of the main areas of eLib Phase 3. The benefits arise from the structured range of different approaches covered by the different projects. Emphases in hybrid library projects ranged from technical to organisational while Clumps covered both regional and subject based approaches. This provided a more comprehensive and informative output than a fragmented approach.
7. eLib Phase 3 extended the number of HEIs involved in the programme, building on the already large number involved through Phases 1 and 2. The Clumps projects accounted for a large proportion of the new players involved.
8. The projects have all been very active in both user consultation and dissemination to ensure that the results are shared with the wider community.
9. Some of the eLib Phase 3 projects have become self sustaining with funding provided by the institutions themselves.

Given the structure which was adopted for eLib, was the Programme conducted effectively within this framework ?

10. The management of the Programme remained efficient and effective. High levels of project cooperation were also a positive development. Changes in the staffing of the Programme Office towards the end of Phase 3 may have been difficult to avoid but did cause a loss of continuity and a reduction in the time available for project support. These problems did not ultimately compromise the quality of the Programme.
11. A positive feature of the formative evaluation work was that it helped projects to embrace high levels of user consultation. There remains a very tight time window for evaluation of working prototypes between the availability of a trial version of a system and the specification of the final deliverables.
12. The relationships between a number of projects and their commercial partners have been difficult at times during the course of the work. Despite this, a satisfactory conclusion has been reached in most, though not all such cases.
13. The model of using a commercial supplier as a means to distribute the outcomes of the projects to a wider user base has been explored in Phase 3 with mixed results. It is ironic that most of the successes of the resulting product have been outside the UK HE sector. There is a suggestion that the UK HE sector is not yet a suitable market for more complex products because of the dominance of BLDSC ILL service, the non homogeneity of UK HE libraries and the lower profiles of library consortia in the UK.

What has the impact been on the different stakeholder communities ?

14. eLib Phase 3 has had an important impact on HE libraries by accelerating the uptake of new technologies in a practical, user service oriented way. It has broadened horizons by exploring a range of approaches. By supporting the continuation of work in on-demand publishing and e-journal production, Phase 3 has also impacted broader communities.
15. The hybrid libraries have established working models, addressing both the technical and institutional issues associated with the increased provision of electronic services by HE libraries. A wide range of approaches have been explored to allow organisations to tailor the findings to their own needs. Developments have been both conceptual, such as information landscapes, and practical such as authentication and personalisation. The hybrid libraries have also provided valuable input to the broader Managed Learning Environments which are now emerging. There has been considerable interest in this work from organisations outside the HE sector.
16. Some of the eLib Phase 3 projects have become self sustaining with funding provided by the host institutions themselves. The Clumps projects have been prominent in this, having built on pre-existing consortium arrangements. It is clear that the management in these organisations find the emerging services useful and are willing to support them as a result. The fact that these projects include a substantial proportion of UK HEIs is also important.
17. The work undertaken on digital preservation is important and has succeeded in raising the profile of the issue from an HE perspective at a high level. The project met its objectives in most areas. The issues of costs were handled at a conceptual level. More work is needed on costs and access.
18. Many institutions would like to develop their infrastructure and services further, to take account of the eLib findings and models, but are unable to fund these developments while maintaining an acceptable level of operational service.

RECOMMENDATIONS

Branding issues

- R.1 The value of the eLib 'brand' was established by Phases 1 and 2 and confirmed by eLib Phase 3. It is recommended that **the importance of such branding issues should be reviewed for future programmes** to ensure that the benefits of a 'flagship' are retained.

Programme management

- R2a It is recommended that the **responsibilities and authorities of the different parties involved in project management should be clearly stated in future programmes**. In particular, the relative authorities of the project boards and the Programme Office should be clear.
- R2b Newcomers to JISC projects tended to take longer to start their projects because they were unaware of the 'tricks of the trade' normally used to speed up initiation. **It is recommended for future calls that support should be provided to 'novices' to ensure that project start up can be as swift as possible.**

Commercial supplier involvement

- R.3a It is recommended that **JISC review the status and likely development of the UK market for potential products which may emerge from its programmes**. This would inform decisions about the nature and level of involvement of commercial systems suppliers. The review should attempt to identify the level of product complexity and pricing that the UK market can support.
- R.3b It is recommended that JISC seek to **encourage more than one supplier to become involved in programmes of this type** to ensure competition and prevent single points of failure. This may require a step back from the cutting edge in some cases.
- R.3c It is recommended that **JISC and commercial suppliers agree a clear specification** of mutual commitments in projects of this type. This should include a statement of JISC specific requirements for the projects. Clear mechanisms for contract changes should also be specified.
- R.3d It is recommended that **contracts for the involvement of commercial suppliers should be put in place at or near the start of the work**. Decisions made on individual contracts should not be dependent on decisions made on parallel projects.

Consortia

- R.4a The value of 'natural' or pre-existing consortia has been clearly evident in this evaluation. It is recommended that **existing groupings should be sought in future when self sustaining outcomes are sought**.
- R.4b It is recommended that **consortia be encouraged to enlist the support of those likely to carry out project tasks at the proposal and planning stage**. If such people are required to carry out tasks in addition to **their normal operational tasks, these should be costed into the proposal**.

Hybrid libraries

- R.5 Much valuable information has been obtained from these projects. Some feel that they have nevertheless ended in a cul-de-sac. To ensure that this is not the case, **steps should be taken by JISC to ensure that the lessons from these activities are not lost.**

Clumps

- R.6 The Clumps have made good progress towards pragmatic systems which satisfy their users within the current limitations of the Z39.50 protocol. It is recommended that **the efforts towards cooperation and convergence within the regional and subject consortia be pursued**, taking account of the non technical developments of these projects.

Preservation

- R.7 It is noted that work in this area has already been continued. It is recommended that **the on-going work should include issues of cost models and access.**

Institutional and user take-up

- R.8a There have been **interesting findings from the Hybrids and Clumps about the nature of user behaviour** in relation to searching and use of these systems. It is recommended that **these findings should be explored further** because they have important consequences for future programme decisions.
- R.8b This evaluation has identified a number of factors which limit institutional and user take-up. These include slower development of back office systems, a lack of IT staff with the necessary specialist skills and a lack of operational resources. **It is recommended that JISC take full account of such factors when setting future objectives.**
- R.8c Many of the projects have found that authentication was a larger issue than expected. Effective authentication is the key to delivery of personalised services and in some cases represents a barrier to local uptake because of the complexity involved. The DNER has picked up this topic and commercial developments are continuing so **it is recommended that JISC continue to monitor developments in this area** to guide those seeking to implement local systems.

Exit strategies

- R.9a This evaluation has perceived that some projects considered that their exit strategies were not realistic and were formulated because they had to have them in place. This view may be the result of hindsight, but it is nevertheless important for projects to set realistic targets. It is therefore recommended that **JISC provides a lead to projects on its expectations for their individual exit strategies and the means that should be used to achieve them.**
- R.9b Where required by exit strategies, **it is recommended that JISC provide support to projects on appropriate models, protocols and basic licences and support in their implementation.** The basis for funding decisions changes as projects/services get closer to market and JISC may need more explicit structures which reflect the shift in balance from funding to investment.

- R.9c It is recommended that JISC **explore the process through which open, collaborative research and development work should become protected once a commercial prospect is identified.** New service models are needed because existing ones are too commercially focused in some cases.
- R.9d It is recommended that if **it is intended to bring the results of an activity to the market, sufficient resources should be allocated to support effective marketing.** This is particularly important where project outputs are not made freely available and depend on commercial mechanisms to achieve widespread use. It may be appropriate to investigate the benefits to HE of working more closely with the enterprise support networks who are geared up to supporting new companies and new product development.

Reporting

- R.10 It is recommended that the **project reporting should be streamlined where possible and should concentrate on key issues of concern.** The aim is to improve the ability of the small central management team to use the information effectively and to limit the overhead on projects.

Dissemination

- R.11a There are significant opportunities for products and services emerging from eLib to expand their markets beyond HE into FE and the e-university to achieve additional revenue/wider benefits. It is recommended that **current JCEI studies should be scoped to consider the needs of FE for JISC type services.**
- R.11b Individual projects have undertaken extensive dissemination during the course of eLib. In some cases, a more centralised approach to dissemination could have optimised the use of resources. **It is recommended that the balance between central and project level dissemination be reviewed for future programmes.**
- R.11c It is recommended that **a single authoritative summary of eLib should be produced.** This could take the form of a book designed to **summarise the end results, particularly those of practical value to librarians** and should be produced in an approachable 'journalistic' style. The summary should take account of the DNER work to summarise Phase 3 lessons and be disseminated actively. It should be linked to an end of Programme dissemination plan established in cooperation with library groups.
- R.11d eLib has produced an extensive resource base of information which remains of value to the library community. Much of this information is held at project level, which requires outsiders to know about the programme to access it effectively. **It is recommended that JISC investigate the use of knowledge management techniques to broaden access to the information resource.** This would complement the previous recommendation and could form part of a larger JISC information resource.

Programme links

- R.12 There are important links between eLib and its parallel and successor programmes. In some cases these could have been stronger, particularly across committees. It is recommended **that JISC should monitor the ongoing opportunities for programme cooperation,** particularly with the complex linkages needed within the DNER and MLE activities.

MAIN REPORT

1 INTRODUCTION

This document is the Final Report of the ESYS Summative Evaluation of Phase 3 of the eLib Programme, undertaken for JISC JCEI under Contract SC/JISC/605. An overview of this report is available as a separate document (ESYS-2000295-RPT-03)

ESYS plc is a consultancy company which brings experience of undertaking and evaluating technology applications programmes in a number of fields, particularly space and defence. This evaluation therefore takes an independent view of the programme from outside the HE library sector. ESYS also conducted the Summative Evaluation of eLib Phases 1 and 2.

1.1 Background

The eLib Programme consisted of three phases. Phases 1 and 2 together formed a £15M programme over a period of 3 years from 1994 to 1997. This activity sought to tackle the issues raised in Chapter 7 of the 1993 Follett Report¹ and represented an inclusive and exploratory approach to these issues within a clearly defined high level framework.

The approach adopted in Phases 1 and 2 produced a wide range of benefits, but it was considered that consolidation of this work in a practical context would extend these benefits by helping to achieve 'critical mass' in key areas. Phase 3 of eLib was the resulting £4.1M three year programme which sought to achieve this by concentrating the programme on the following four areas:

- Hybrid libraries
- Large scale resource discovery (or 'Clumps')
- Digital preservation
- Developing services from Phase 1 and 2 projects

eLib Phase 3 was managed by the JISC Committee for Electronic Information (CEI), later to become the JCEI.

1.2 Context

eLib Phase 3 arose from a need to build on the earlier eLib work, but also presented an opportunity to take account of the dramatic changes in the information environment between 1994 and 1997. During this time, there was rapid growth in the general use and profile of the Internet. JISC continued to develop the JANET service, providing a 2.5Gb/s core network service free at the point of use to academic users and thus providing an excellent basis for further development of electronic library services. Such developments confirmed that the changes foreshadowed by eLib Phases 1 and 2 had taken root and required concrete and practical responses. It also changed the development priorities.

In parallel with Phase 3, JISC organised or took on responsibility for a range of programmes which complemented eLib. These included:

- Non Formula Funding of Specialised Research Collections in the Humanities (1994 to 1998)
- the Joint Technology Application Programme (JTAP) (1995 to 1999)
- the National Electronic Site Licensing Initiative (NESLI) (1998 to 2002)
- the JISC/NSF Digital Libraries Initiative (DLI) (1999 to 2002)

¹ The Libraries Review Group of the UK HEFCs, chaired by Professor Sir Brian Follett, reported in 1993

Together with eLib, these have contributed to the development of the Distributed National Electronic Resource (DNER) as well as related Funding Council funded activities such as the Research Support Libraries Programme (RSLP).

1.3 Phase 3 objectives

The main benchmarks for the evaluation are the programme objectives. These are not formally expressed in a single statement, but the most authoritative reference points are the two main JISC Circulars which formed the programme calls, JISC 3/97 and 5/97. From these, the objectives of Phase 3 may be summarised as described in Table 1-1.

General objectives <ul style="list-style-type: none"> – Integrate the earlier eLib developments – Increase emphasis on user service – Continue and extend the practical emphasis of eLib 	
Hybrid libraries <ul style="list-style-type: none"> – Synthesise technologies from new electronic library developments worldwide – Integrate electronic products & services with the historical library functions – Develop models for well organised, accessible hybrid libraries – Cover a wide range of techniques seamlessly – Use commercial products where effective – Encourage institutional commitment and take-up – Develop skills and their embedding 	Large scale resource discovery ('Clumps') <ul style="list-style-type: none"> – 'Kick start critical mass' in use of Z39.50 – Produce model technical and other agreements to allow subsequent Clumps to be justified either regionally or by subject. – Encouraging Clumps to form – Providing unifying organisation, standards and brokerage services. – In the long term to see Clumps extending to a truly national scale. – Diversity of institutions and systems – Producing benefits beyond the immediate region – Exit strategies – not to fund long term
Digital preservation <ul style="list-style-type: none"> – Piloting University / publishers' archiving of digital materials – Building costing models – Exploring data type issues – Developing skills for digital preservation – Obtaining cooperation of copyright owners – Preservation of material published through eLib projects – Producing concrete recommendations in: legal agreements, access controls, metadata requirements, selection criteria, standards issues, good practice guidelines 	Developing services from Phase 1 and 2 projects <ul style="list-style-type: none"> – Further develop Phase 1 and 2 projects towards self sustaining service status

Table 1-1: Programme objectives for eLib Phase 3 programme areas

1.4 Evaluation objectives

The task of the ESYS Summative Evaluation is to review the eLib Phase 3 programme from the perspective of an organisation outside the HE sector. The high level questions which can be posed for eLib Phase 3 are similar to those for Phases 1 and 2, namely:

- Did the Programme supply sufficient added value to justify the allocation of JISC resources - did eLib Phase 3 provide benefits which would not have happened otherwise ?

- Did the adoption of a national, managed programme provide benefits compared to a more fragmented distribution of the funds to HEIs to pursue their own ends - was the right approach adopted ?
- Given the structure which was adopted for eLib, was the Programme conducted effectively within this framework ?
- What has the impact been on the different stakeholder communities ?

In addition to the general questions of value, Phase 3 has seen a more prominent role for commercial suppliers operating in support of the HEI team members and in some cases as team members. Accordingly, the following questions may also be posed:

- What were the issues surrounding the involvement of commercial suppliers in the programme and what lessons can be learned ?
- What implications do these findings have for the strategy of using commercial suppliers as a channel through which to broaden the programme impacts ?

The task of the ESYS Summative Evaluation is thus to judge the successes or otherwise of eLib Phase 3 in relation to the objectives set out for the Programme as a whole as well as for its major constituent parts.

1.5 Structure of report

The structure adopted for this report follows the three main areas of the evaluation:

- Chapter 2: Methodology - an outline of the approach to the evaluation
- Chapter 3: Operation and management - evaluation of these processes including an assessment of the origins and set up of the Programme
- Chapter 4: Outputs and achievements - evaluation of the Programme in terms of its major subject areas, concentrating on the work of the projects
- Chapter 5: Impacts, benefits and value - assessment of the overall impacts of the Programme and whether these represent value for the investment
- Chapter 6: Strategic implications - how the impacts address strategic issues for JISC
- Chapter 7: Conclusions and recommendations

The logic of the report is expressed in Figure 1-1.

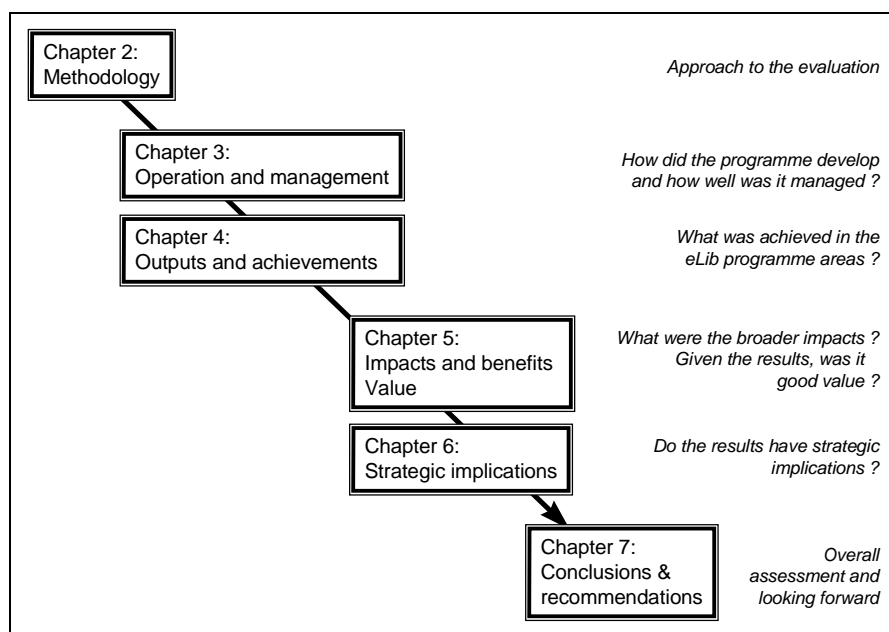


Figure 1-1: Report logical structure

1.6 Acknowledgements

This evaluation is a summative process which draws on the comprehensive material already produced within the eLib Programme. Such material, together with a series of interviews, is the main information sources for this report. The cooperation and input from those interviewed, together with the inputs from written sources, are gratefully acknowledged.

2 METHODOLOGY

2.1 Scope and terms of reference

The transition between the first two phases of eLib and Phase 3 involved a number of overlaps and needs to be defined for the purpose of the evaluation. The main reason for the uncertainty is that some of the Phase 1 and 2 projects were extended into a period which covered Phase 3. In some cases, there was a clear continuity with this continuation funding while in other cases, effectively new projects were created which still maintained recognisable links to earlier eLib work. The scope of the evaluation is therefore defined as follows:

- The three main eLib Phase 3 areas of Hybrid Libraries, Large Scale Resource Discovery (“Clumps”) and Digital Preservation.
- The “new” continuation projects (HERON, which grew from SCOPE, and EPRESS which evolved from Sociological Research On-line)
- In addition to the above, the EDDIS continuation project has been included in the evaluation insofar as it relates to issues involving commercial suppliers.

The RDN continuation, which emerged from the 10/98 call, is not included in the evaluation because it represents a continuation of the activities under the ANR area of eLib Phase 1. Phases 1 and 2 of eLib were part of a process of electronic library development whose objectives were clearly set out in Chapter 7 of the Follett Report. It was therefore appropriate to evaluate the work of these phases directly against the Follett Report. Phase 3 represents an evolution and concentration of the same process. It is therefore more appropriate to benchmark it to the objectives as they had evolved to take into account the lessons of the earlier work.

For Phase 3 therefore, the JISC Circulars 3/97 and 5/97 are the key references, supported by call 2/97 for project continuations. These set out the JISC CEI objectives for each of the Programme areas. It is also valuable to reference the work back to some of the original Follett objectives, but it is clear that the electronic world had moved on dramatically between 1993 and 1997. In particular, the Internet and WWW had a very low profile in 1993 (and were not stressed in the Follett Report), while by 1997 these developments had become public property and were everyday academic and business tools.

The emphasis in this report differs slightly from that of the Phase 1 and 2 summative evaluation. In this evaluation, the work of individual projects is given greater emphasis. This allows some of the technical lessons to be identified, reflecting in turn the more practical emphasis of Phase 3. The operation and management of the programme are considered as before with slightly less emphasis. The exception here is an evaluation of the role of commercial suppliers in the Programme. The impacts and strategic implications of the Programme are considered as before, though given the smaller scale of the activity, more of the specific benefits of Phase 3 can be identified at project level.

2.2 Approach

The evaluation analyses the programme in the following stages:

- Review the operation and management of the Programme
- Analyse the outputs and achievements of the Programme in relation to the original objectives
- Assess the impacts, benefits and value of the Programme in a broader context
- Identify lessons learned, including technical findings

- Recommend future actions

The process has been a linear one of data gathering, analysis and reporting. The smaller scale of the evaluation precluded the use the iterative approach used for Phases 1 and 2.

In its analysis of the issues, the evaluation therefore needs to take account of the following:

- The objectives for the Phase 3 programme evolved from the earlier Phases of eLib against a technical background which continued to develop very quickly
- The overall effects of eLib Phase 3 are more closely linked to its main constituent areas (Hybrids, Clumps and preservation) because of the more concentrated nature of this phase
- eLib has been conducted in parallel with initiatives which address complementary or overlapping issues and whose relative contributions are difficult to unravel
- Many of the aims of eLib are difficult to quantify including learning, mobilisation and catalytic effects to be achieved by pulling in many actors and organisations

2.3 Sources

The main sources accessed to produce this report are as follows:

- Key reports
- CEI / JCEI documentation
- Project reports
- Formative evaluation
- Conferences
- Interviews

The timing of the evaluation means that not all of the project final reports are available to support the evaluation. As a result, in some cases preliminary reports have had to be used.

Interviews undertaken in support of the evaluation are listed in Appendix A. The selection of interviewees, which was agreed with the JISC Evaluation Working Group, attempts to cover a mix of 'insiders' and 'outsiders' while providing more comprehensive coverage of the smaller number of projects in Phase 3.

In addition to the interviews, the opportunity was taken to attend the Hybrid Libraries workshop which was held in Edinburgh on 26th February, 2001 during the course of the evaluation work.

3 OPERATION AND MANAGEMENT

3.1 Origins and Formation

eLib Phase 3 represented a change from earlier eLib work, though it remained a clear part of the overall eLib Programme. A small group of key people from FIGIT / CEI started to plan Phase 3 shortly after the initiation of Phase 2 in 1995 / 96. The plan led to a proposal which was submitted to Sir Brian Follett for review, thereby helping to ensure continuity of purpose. The Programme Director noted that although Phase 3 was a logical progression from the earlier work, it was not universally welcomed. The resistance came from those who considered that the libraries had had sufficient support already.

Phases 1 and 2 are often characterised with the well used 'letting 100 flowers blossom' epithet. This is a reasonable description with the proviso that there was a clear framework within which the development work took place. The role of Phase 3 in response to the outputs of this phase may be characterised in the following actions:

- Integration: pulling together the best elements from Phases 1 and 2
- Service: increasing the emphasis on the user and extending the range of user types
- Practicality: making the concepts work in a 'real life' situation

Figure 3-1 shows the transition from Phases 1 and 2 to Phase 3. The scale used shows the percentage of the total Phase 1 and 2 budgets and the Phase 3 areas are shown on a comparable scale. Related Programme areas have been shown broadly opposite each other where possible (and in the same colour, where this is visible).

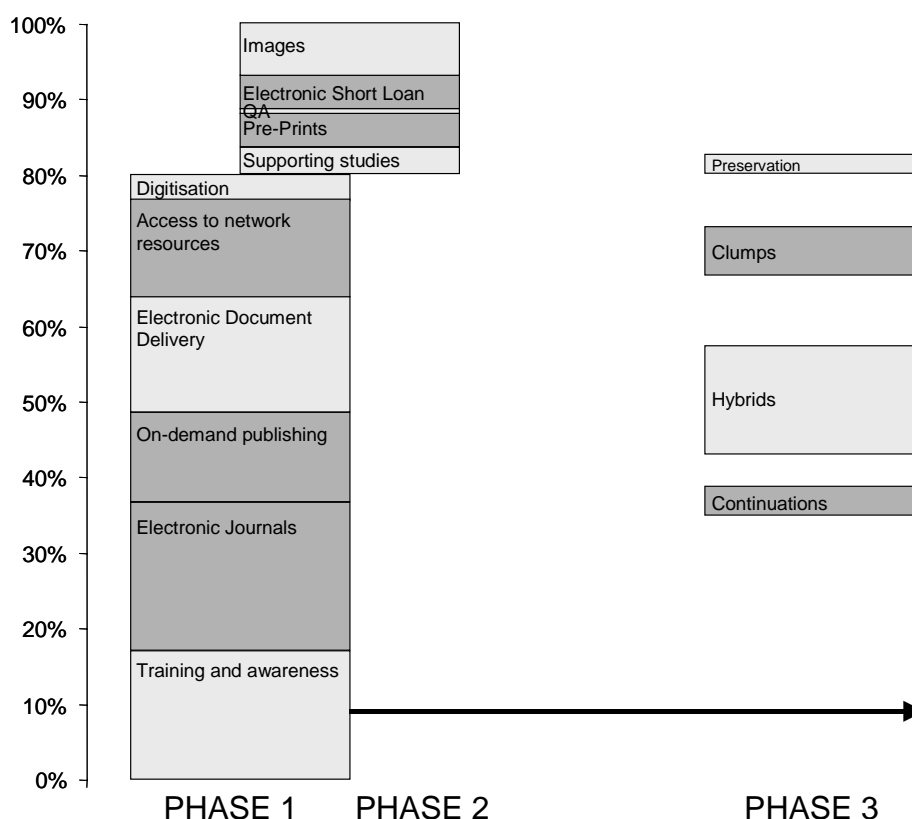


Figure 3-1: Transition from eLib Phases 1 and 2 to Phase 3

There were a number of issues associated with the selection of Programme areas for Phase 3. These were:

- The approach to the inclusion of the Resource Discovery Network (RDN) which emerged from Phases 1 and 2
- Whether or not e-books should be included as a topic for Phase 3

The RDN work effectively represented a continuation of the Access to Network Resources work from Phases 1 and 2. This activity was not included in the original Phase 3 calls because it was subjected to a study to review the case for continuation funding. The work eventually proceeded following a call in JISC Circular 10/98 and the RDN continuation was launched in November 1999.

The omission of the e-books element is viewed as a missed opportunity by the Programme Director. Work has now been started in this area at an experimental level, but progress would have been much greater had Phase 3 covered this topic. Librarians at international level have a general concern that their needs with regard to the rapid growth of e-books are being overlooked.

The concept of the "Digital library" was understood differently across JISC. Some wanted to exclude it as a specific topic for JISC. This is an issue which has persisted and partly explains the use of the term "DNER" rather than any reference to libraries.

3.2 Related programmes

Figure 3-1 shows an outline context for eLib Phase 3.

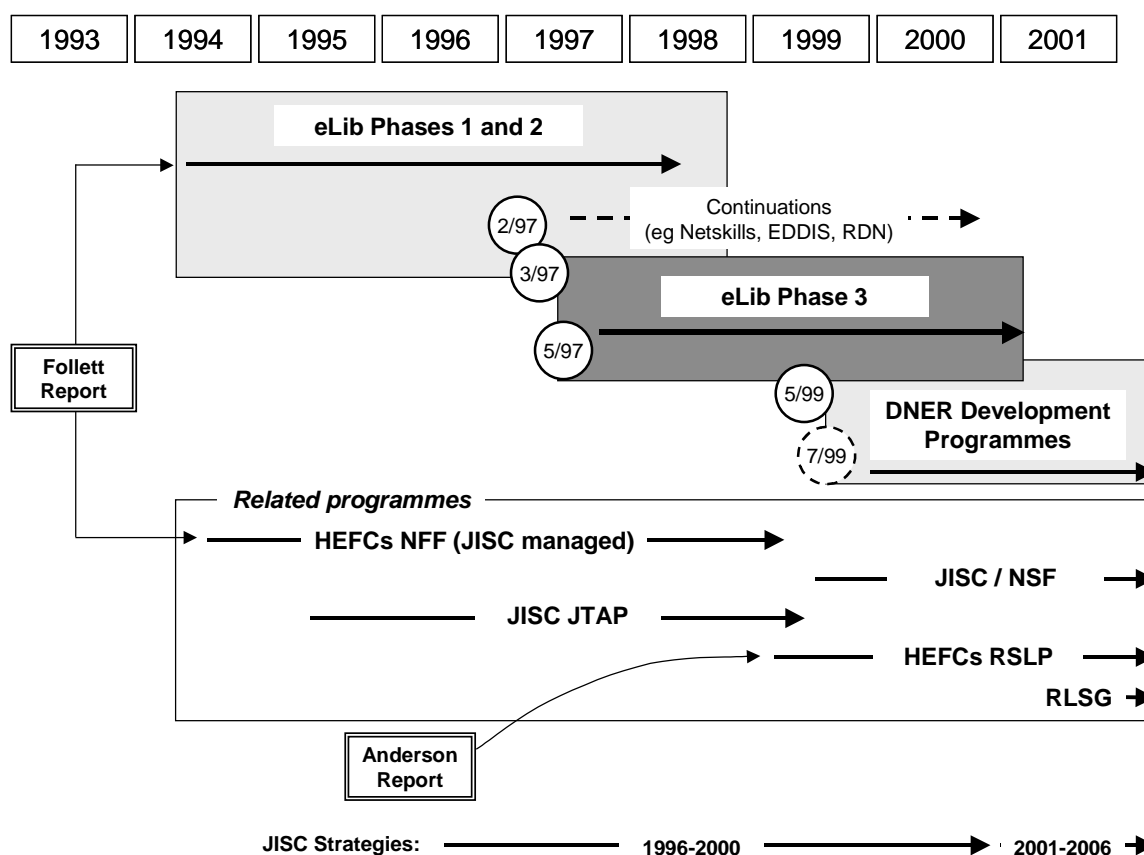


Figure 3-1: Context for eLib Phase 3

The following related programmes and initiatives at national level in HE formed the context for eLib Phase 3:

- Non Formula Funding (NFF) – an outcome of the Follett Report in parallel with the first two phases of eLib. This was designed to support improving access to special collections and archives in the humanities. The investment of £10M per year between 1994 and 1999 supported activities such as the Arts and Humanities Data Service (AHDS).
- JISC Technology Applications Programme (JTAP). A general programme supporting technological developments in the HE sector its aim was to identify, investigate and promote the timely use of key technologies that underpin applications of relevance to the needs of the higher education community and in particular those identified by the JISC strategy.
- National Electronic Site Licensing Agreement (NESLI): a service designed to promote the widespread delivery and use of electronic journals in the UK Higher Education and research community. The initiative seeks to address the many issues which at present hinder the most effective use, access and purchase of electronic journals in the academic library community.
- JISC / NSF: A programme of activities jointly funded by JISC and the National Science Foundation in the US. This brought together skills developed under eLib with those resulting from the more blue skies approach favoured in the US. This programme has been used to fund activities which have developed through eLib in areas such as digital preservation. Specific objectives include:
 - assemble collections of information that are not otherwise accessible or usable because of technical barriers, distance, size, system fragmentation or other limits
 - and / or create the understanding and new technology to make it possible for a distributed set of users to find, deliver and exploit such information
 - evaluate the effect of this new technology and its international benefits
- The Research Support Libraries Programme (RSLP) derives from the deliberations of the Follett Review (1993) and the associated Anderson Report (1996). It is funded directly by the HEFCs and brings together both traditional and new forms of access to library information, with specific reference to support for research. The principal beneficiaries of the Programme are researchers employed in UK HEIs and their postgraduate research students, though there will be significant benefits for other groups. The Programme is intended to meet, in a library context, the need for collaboration and sharing in the use of the research infrastructure envisaged more generally by the Dearing and Garrick reports.

3.3 Project selection

The form of eLib Phase 3 was agreed as described above and consisted of the three main strands, Hybrid Libraries, Clumps and Digital Preservation.

Within this framework the process of project selection was carried out by a project evaluation panel chaired by David House of the University of Brighton and including representatives from the Programme Office. The reason for this approach was to avoid conflicts of interest for the JISC CEI management team. The evaluation panel undertook the whole selection process and submitted a package of funds and projects for the Phase 3 programme for the JISC CEI management team to accept or reject, but not modify.

On the whole, the selection was not contentious. The main exceptions to this were the selection of HERON in preference to a follow on for the ACORN project and the rejection of a strong proposal from a library school which was considered to be too research oriented.

As suggested by the programme calls, some of the proposals were from consortia with existing links, particularly in the Clumps area. Examples are the M25 Link group and RIDING which formed around the Yorkshire and Humberside Universities Association (YHUA). On the whole this was beneficial, although it did not prevent organisational issues from arising.

Some modifications to submitted proposals were required for project awards. The Hybrid Libraries project HYLIFE started as two separate proposals which were merged to form a project which included representatives from as far apart as Plymouth and Inverness (Highlands and Islands). Technical partners were also allocated to projects at this stage. For example, Fretwell Downing Informatics was allocated to the Music Libraries On-line project as technical partners.

The final allocation of projects for Phase 3, and the proportional breakdown is given in Figure 3-1.

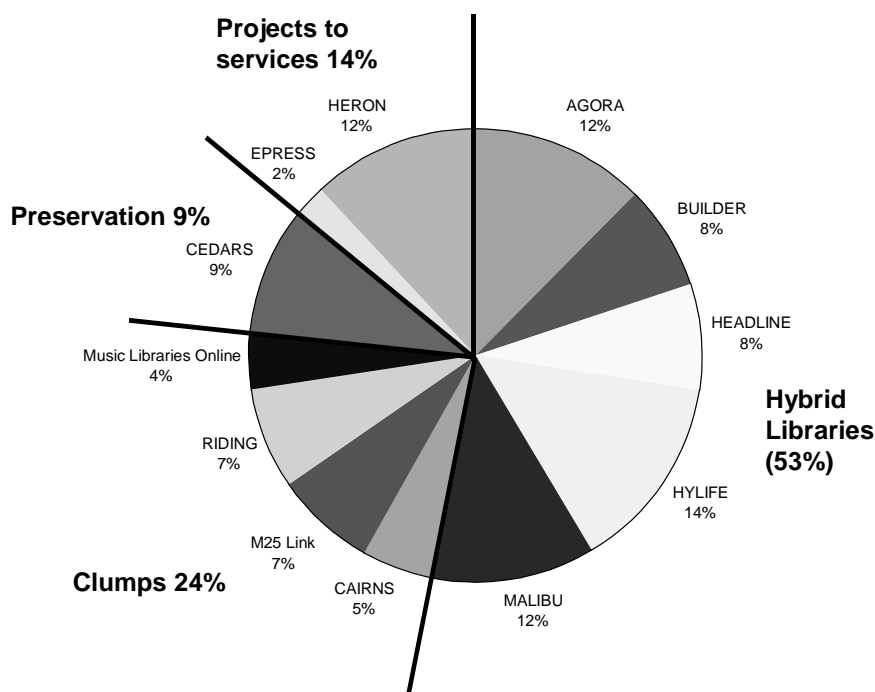


Figure 3-1: Final breakdown of project funding

The results of the selection process were that hybrid libraries and Clumps covered more than 75% of the programme, with hybrid libraries alone accounting for more than half. Preservation was covered with a single project taking 9% of resources. The average project size was significantly larger than Phases 1 and 2:

- eLib 1 & 2: total of £15M between 59 projects = £254,000
- eLib 3: total of £ 4.1M between 12 projects = £341,000

In terms of the organisations to whom projects were awarded, eLib Phase 3 continued to include new organisations in the programme. Twenty one organisations were involved in Phase 3 that had not previously been involved in eLib, mainly through the Clumps projects. Appendix B lists the HEIs involved in eLib Phases 1 to 3 showing the lead and partner

organisations. From this list it is actually much easier to count the number of HEIs *not* involved in eLib, which comes to 43, of which 13 are medical schools, from a total of 150.

Given that eLib Phase 3 involved new participants, there have been some comments on the selection process from the perspective of those uninitiated in these activities. These include the following:

- The language used in the calls is impenetrable
- The submission deadlines are very short
- This results in rapid team building and rapidly prepared proposals

3.4 Programme steering

In the early stages of Phase 3, the Programme Office continued to operate in much the same way as it had in Phases 1 and 2. It reported to the CEI.

Newcomers to the JISC process have commented on the long start up time associated with their Phase 3 projects. This relates mainly to the internal difficulties in selling project start up based on the level of contract cover provided by the instruction to proceed. This instruction, when it arrives, will only commit funds for a limited period (eg 6 months) which in effect means that organisations must proceed at risk. There are, apparently, many 'unwritten rules' and 'tricks of the trade' which are used by those in the know to overcome these problems. For future calls, it would be valuable to provide support to novices to ensure that project start up is achieved as early as possible.

An interesting development in Phase 3 was the high level of project cooperation which took place independently of the formal management structures (The 'Gardeners Meetings'). This has been contrasted with a more competitive ethos in Phases 1 and 2. Phase 3 Project managers met in this way at least quarterly to discuss findings, issues and problems. This was considered to be a very valuable forum by those involved, particularly when dealing with issues of common concern such as the role of commercial suppliers. The meetings were also used to compare notes on Programme Office demands of projects. A degree of caution could be necessary with meetings of this type should they start to re-allocate work or modify objectives. There is no evidence that this happened on any scale within eLib however.

To a limited extent, this cooperation extended to a degree of coordination within the Programme areas. For example, the Clumps projects allocated activities between the projects in areas such as Collection Level Descriptions, Serials and the testing of the Europagate software. In general, this development is valuable because it promotes a more intelligent use of resources, a sharing of lessons learned and flexibility to follow up new leads efficiently. Nevertheless, some care is needed to ensure that the overall objectives are maintained when such changes are considered.

Overall there is a need to ensure that JISC as the funder has the final say in these issues. This could be accomplished through the contractual funding letter and the need for project plans to be approved.

The Programme Office role continued through the programme and included developing the DNER and MLE calls. Towards the latter part of Phase 3, there were substantial changes in the Programme Office. The Programme Director departed early in 2000 and responsibility for management passed to the DNER, which was in its early stages of development. The effort needed to establish the DNER reduced the amount of time available for eLib support.

3.5 Project support

Project managers, including those with a background in industry have commented that the Project Management training was better in Phase 3 than in Phases 1 and 2. The business plan workshop was also well received. This represents a positive development because the management training in Phases 1 and 2 was not particularly well received.

In spite of the smaller number of projects, the Programme Office resources were still stretched, particularly in the later stages of the work when the staffing profile changed more frequently and less time was available. Project reports were getting larger and the Programme Office had trouble keeping up with the process of reviewing and commenting on them. Some comments were made that projects worked hard to meet reporting deadlines then heard nothing in return. This can be partly attributed to the imposition of a common deadline imposed to assist with input to formative evaluation, a key part of which was the summary of annual reports. Despite this, there were still comments that turnaround time in this aspect of the formative evaluation were too long to allow results to be used effectively.

Some of the projects found that it was difficult to recruit and keep effective project technical officers. Such officers were clearly missed on some projects, especially where monitoring of commercial partners / subcontractors was required. Support was provided from the centre in these cases, although some projects felt that more could have been done, particularly where staff were relatively inexperienced in work of this type. One request was for a more active role for the Programme Office to seek out problems before they became embedded. It should be noted that solutions to some of these problems required additional resources which the Programme Office was not always able to provide.

Comments were also made that the Programme Office central role in supporting dissemination could have been greater. There was maybe also a need for a final eLib conference to round off the Programme.

3.6 Project management issues

Some specific issues of project management have emerged from the interview process. These include:

- The disproportionate gap between the efforts put into reporting and the response received from the Programme Office
- The timing of reporting
- The ability of JISC representatives on steering committees to provide sufficient additional inputs
- The project management methodologies applied

A number of project managers and directors contacted have commented on the fact that while much effort was put into reporting and ensuring that reporting deadlines were met, there appeared to be little use made of the report submitted. Reports of the type submitted are clearly an important part of the management process and need to be done. It would appear that in some cases, however, the reports could have been shortened to cover the basics in a form which would also make them more digestible for the limited resources available at the Programme Office.

The issue of the JISC representatives appears to relate mainly to the time required. In particular, the comment was made that due to pressure on diary dates, if a representative missed one meeting, it might be up to a year before the next meeting, making it difficult to stay in touch.

There was also an issue raised by the fact that Agora used the PRINCE project management methodology which appeared to be a poor fit with the prescribed methods developed for eLib. This is a standard government approach so there was some concern in the Agora project as to why it did not match eLib requirements. Discussions about this raised more fundamental issues about who is accountable for project performance (particularly the balance between the Programme Office and the project board) and what level of information is needed by the Programme Office to monitor the project.

The evaluation work carried out in Phase 3 appears to have been more directed towards assessments of user requirements and the extent to which these are satisfied. This is a valuable development and is in keeping with the more practical emphasis of the Programme.

3.7 Commercial interactions

A number of the projects in eLib Phase 3 included a commercial supplier of library management systems as a project partner. There were commercial partners in Phases 1 and 2, but few of these were concerned with software development as part of the project. The partner involved in most of the Phase 3 projects brought their developing product as an input to these projects. This company was one of the few commercial organisations prepared to get involved in research and development work through programmes such as eLib. Levels of commercial involvement remained comparatively small. These ranged from 10% to 18% of the three Phase 3 project budgets, giving an overall involvement in the programme of less than 4%. There was also involvement in a Phase 1 continuation project. Partnerships with commercial suppliers are likely to be important in future programmes, so it is important to learn lessons from the eLib Phase 3 experience.

Of the projects with such involvement, all went through difficult periods in the relationship. Of these, two had a satisfactory ending with the projects ultimately happy with the input received. In one case, the commercial software was replaced with a simpler software suite developed by a consultant brought in to provide technical support. The final case ended with the dissolution of the project because there were irreconcilable differences about the aims of the project and the stage at which the final product should be regarded as marketable.

The fact that only one supplier was substantially involved may appear an easy problem to avoid, but was not. The projects confirm that there were few other companies prepared to work in this way. Given the eLib project work alongside regular sales and development work, it was unfortunate (for eLib) that the supplier involved won a major development contract in the same application area shortly after the eLib work started. This appears to be at the root of some of the problems encountered, since company resources with experience of the relevant products are likely to have been stretched at this stage. This may also explain the other main project problem which was that there was insufficient project specific customisation applied.

In management terms, it became clear with hindsight that there should have been closer links between the partners in each case, and that a much clearer specification should have been set out to scope the inputs from commercial suppliers. It could also be argued that JISC could have provided a more rapid response to some of the issues which arose. In fact, the Programme Office identified some of these shortcomings and made appropriate changes in the reporting procedures.

In addition to the involvement of a commercial supplier, some projects also used consultants. One example was CEDARS, which used external consultants in two areas of its work:

- Technical support
- IPR support

The consultancy was considered to have been successful in the IPR support, but less than successful in the technical area. The reasons suggested for this relate mostly to the ability of the consultants to engage with and receive feedback from the organisations with which they are required to work. In the CEDARS case, the IPR consultant worked with the library who had clearly defined needs for the work and could therefore provide effective feedback. The technical support consultant was not able to engage effectively with the computing services and therefore was not able to provide the output required by the project. The message from the CEDARS project in this regard was that consultants should not be used as a means of 'passing the buck' and that obtaining value requires some time allocated to support and interact with their activities.

3.8 Summary

eLib Phase 3 was a well managed programme. The Programme Office had established a more mature set of procedures by the start of Phase 3 which were applied to the benefit of the projects. The project management training had improved compared to the earlier Phases and the project planning in particular was more specific.

The procedures developed for the management of Phase 3 projects faced stiffer tests in having to handle commercial suppliers with different agendas. Although the procedures in place were not sufficient initially, these were changed to a more effective form with some success.

An endemic feature of eLib and similar projects has been the staff turnover. The Programme Office proved not to be immune from this and it was unfortunate that there was an increasing turnover of staff towards the end of the programme. This included the Programme Director who made a positive career move as the Programme was drawing to a close. The levels of support on the programme were reduced towards the end because the support staff brought in to cover this period were only available on a part time basis.

4 OUTPUTS AND ACHIEVEMENTS

4.1 Integration and exemplars of hybrid libraries

4.1.1 Characteristics of the domain

The hybrid libraries domain in eLib covered a broad range of issues - technical, organisational, support to teaching, learning and research, and library management. The projects also covered a variety of subject areas, user types and materials. The emphasis was at local level to encourage institutional take up of the lessons learned and models while dissemination was at national and international levels.

Few working models of the hybrid library existed for eLib Phase 3 projects to follow. Despite significant international research activity on digital libraries, few projects had focused on implementation issues in a hybrid environment. With an emphasis on implementation, it was necessary for the hybrid libraries domain to become more actively involved with suppliers of library management systems than was the case for eLib Phase 1 and 2 projects.

Managing diversity in future systems was an important emphasis of the Hybrids work, which meant catering for :

- New types of HE library user (more mature, part time, non UK)
- New ways of supporting users (eg distance learning).

There has never been a clear consensus on the definition of a "hybrid library" and this has an impact on how the achievements in this area are regarded across the library community. Accordingly, a common view of respondents for this evaluation was that their libraries have been hybrid for some time now and that the term should not be used to imply that this is an interim phase in a move towards full electronic-only implementation.

Several hybrid library projects struggled with Z39.50 to achieve good search results and were able to use some of the early Clumps work to inform their progress. There were no particular links between the Hybrids work and digital preservation, however the Hybrids teams had a high level of awareness of the CEDARS project.

4.1.2 Objectives

The aims of this area which form the basis for the evaluation were set out in JISC Circular 3/97 as follows:

- Establish a small number of exemplar / pilot hybrid library development projects
- Integrate a wide range of traditional / new resources as seamlessly as possible
- Include results from earlier eLib work, the EU Telematics programmes and other national and international programmes
- Commercial products available from publishers and other suppliers will also play a key role
- Integration development work required for these projects was noted.

The assessment criteria given in the JISC Circular (for the initial selection of projects) were as follows:

- Institutional commitment and higher management involvement
- Project management and systems integration procedures
- A selection of technologies were to be incorporated
- There should be development of the human resource

- Monitoring, evaluation, quality improvement and review procedures should be included.

The final allocation of projects is set out in Figure 4-1. This shows a broad coverage of emphases, technical in AGORA, institutional in MALIBU, operational in HYLIFE and scalable models in HEADLINE and BUILDER.

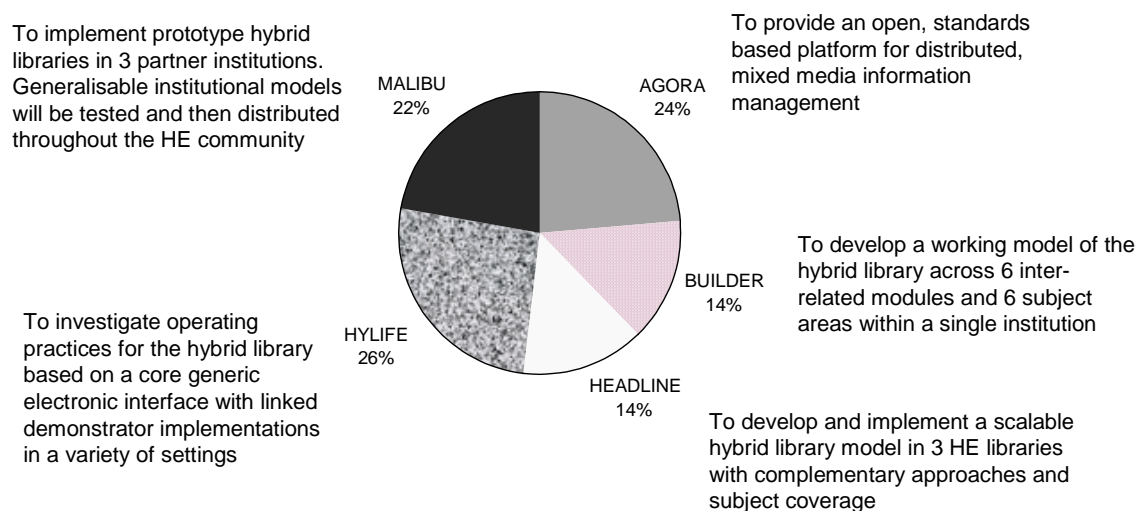


Figure 4-1: Percentage funding of hybrid library projects

The following section considers the achievements of each project in turn.

4.1.3 Project Assessment

4.1.3.1 Agora

The premise of Agora was to create a prototype system for the DNER, a hybrid library management system (HLMS) as a proof of concept rather than a system which would be developed to fully operational status.

The partners - University of East Anglia, UKOLN, Fretwell-Downing Informatics (FDI) and evaluation partners CERLIM had been involved in the earlier MODELS work which transitioned from Phases 1 and 2 towards the hybrid library. A continued relationship with the development of the MODELS Information Architecture was important to embed Agora in existing frameworks.

Agora was seen as the "technical" project in the Hybrids group although it also had ambitions to address broader issues of changing culture and to produce reports and tools to help change management in libraries.

At the time of the project proposal it was clear that few LMS suppliers were prepared to commit resources to R&D in this area, particularly through involvement in eLib. Many claimed they were not moving into this area yet and from Agora's point of view their systems were not suitable for integration work. This latter issue was important as the project needed to demonstrate integrated services for Inter-library loan and document delivery.

System development was based on the FDI VDX LMS software, the only project in the Hybrids group to take this approach. This provided valuable information on the practicalities

of joint HE/supplier research and product development and the difficulties of marrying the agendas of the different parties.

The system specification was a key deliverable from Agora and has been made openly available to the community, including LMS suppliers. It has provided a detailed tool for library managers to use in procurements and a requirements specification for commercial LMS suppliers. It has been described by Agora as the "first complete functional description for the hybrid library". The extent to which it has actually been adopted as a reference point is difficult to gauge. In the interviews carried out for this evaluation, the Agora outputs have not been specifically mentioned, although it is part of the broader body of knowledge produced through eLib Phase 3. The visibility of Agora (and other hybrid projects) has been questioned by one respondent, possibly due to the small scale of the pilot. In the view of the project manager, the appearance of new hybrid products from suppliers like ExLibris and OCLC which "look remarkably like the Agora specifications" is no coincidence given that the specification has been public for nearly 18 months now. Agora has succeeded in creating more informed customers who are putting pressure on LMS suppliers. There are mixed views in the community as to the responsiveness of suppliers - some acknowledge that the suppliers are adding new and appropriate features, others consider that there has only been a limited impact and that systems are still focused on old models of library administration.

The concept of "Information landscapes" was integral to the Agora organisation and its presentation of resources. The project matched collection level descriptions to the information needs of users utilising the national collection level description schema drafted by a national working group and edited by UKOLN. This approach was part of a standards-based management framework. This concept is now embedded in the FDI VDX software which has sold better outside the UK than within it, partly because of a greater degree of consortia purchasing in other markets.

Problems highlighted during the installation of Agora at Library Associate sites pointed to scalability issues and prompted discussion about future delivery based on Application Service Provision (ASP). Installation and implementation of complex HLMS require considerable technical expertise which is not available in all HEIs and may restrict take up of future systems. There are significant challenges ahead for interoperability as different suppliers become involved in the broader HE IT infrastructure and the library in particular.

Despite the technical focus of the project, it has recognised the need for human resource issues to drive progress. Case studies and reports have been disseminated to complement the development work. The first phase of case studies - carried out by a series of library associates - covered the functionality of the system, use by different user groups and training and management requirements. A second phase will be completed by late summer 2001 when the project ends.

The project's evaluation report for Q1 2000 notes that Agora is well suited to applications focused on the use of ICT in learning and teaching and that the take-up by 5/99 projects should be monitored. This is a broader theme emerging across the Hybrids area and addressed specifically in the DNER funded project ANGEL.

4.1.3.2 BUILDER

BUILDER had a specific remit to investigate the development of a hybrid library within an individual institution, The University of Birmingham. This involved technical developments to create practical demonstrators and pilot services and well as evaluation of the impact of the evolving model of the hybrid library on a range of stakeholders.

The project has successfully delivered a wide range of products accessible through the BUILDER website including a hybrid library demonstrator. This demonstrator included the Clumps and Hybrids project search engines, exam papers database, induction packages, electronic short loan, institutional search engine demonstrator, metadata index demonstrator and various evaluation reports and guides.

A greater understanding of the infrastructure needed to deliver various hybrid library services has been critical to the achievements of BUILDER. Authentication plays a large part in this infrastructure and the delivery of personalised services. BUILDER developed two authentication strands. One involved the Campus Novell Directory Services and the other used the Talis Library Management System. The latter was able to expose the practical difficulties of using the former. The Talis authentication approach was much more successful and enabled the use of the Exam Paper Database by off-campus students using their ID card. This generated interest elsewhere in the HE community as a way of easing the authentication process. It is notable that Novell have subsequently developed a new product for authentication which addresses some of the problems identified earlier in BUILDER. The Exam Papers Database has been exported to Oxford University, as well as to the Academic Office of Birmingham University. This work takes forward some of the earlier eLib work on electronic document delivery.

BUILDER adopted "off the shelf" technologies where possible to facilitate the transfer of developments to other institutions. Nevertheless, some interviewees have questioned the extent to which this transfer has taken place, other than the Exam Papers Database. One view was that it appears to be easy to transfer, but not in reality. One user from outside the consortium stated that "we didn't use as much as we would have liked to of BUILDER even though we are also Talis members. We had high hopes but nothing has come of it yet. Our technical team thinks that the BUILDER solution is too technical to transfer to our local systems". This is a wider issue for all Hybrid library projects.

BUILDER formed a good working relationship with the Talis LMS team reflecting their common links to the University of Birmingham. Developments included a Toolbox to enable Web applications to access the LMS and a workflow system for ordering materials. These were not productised by Talis because of subsequent upgrades to the Talis server system, although the functionality of both was useful and the use of APIs was advanced. It was felt by the team that any future partnerships with external suppliers need greater integration with the company's product development strategy if they are to flourish. This is a wider issue for all JISC projects involving commercial partners where new products are envisaged and raises the further question of how far HEIs can expect to be involved given the commercially sensitive nature of new product development.

In terms of scaling issues, the electronic short loan pilot is being developed as a fully operational service. Ostensibly the project has been using HERON as the model for this although they are already doing copyright clearance themselves which is changing the perception of the project. There is still work to be done to investigate the full costs of meeting the service requirements for the operational service but demand is there. The potential of scoped search engine products to support teaching and learning was tested through products like the electronic journals search engine.

BUILDER has created high levels of awareness across the UK HE library community despite being based at one institution. Dissemination to the wider community was a key requirement for the project at the outset to justify its central funding. The project has been cited by many of the interviewees in this summative evaluation. The team allocated days for the provision of advice and support to other HEIs considering hybrid library developments and this "consultancy" role is still continuing. The project web site has also been heavily used.

Internally BUILDER has helped Birmingham's own hybrid library plans progress in a controlled manner as well as establishing the library as a key player in the institution's web strategy for support to teaching, learning and research. The transfer of two of BUILDER's team to the new Corporate Web Division has played an important part in ensuring that BUILDER knowledge and expertise continues to benefit the institution.

Overall the project has covered a wide range of issues in the institutional context while taking into account developments in the wider environment. Although the hybrid library product is not "finished" or fully operational as a whole, several elements have been taken forward by Birmingham and others and the lessons learned are available to the sector in an accessible form.

4.1.3.3 HEADLINE

HEADLINE aimed to design and implement a working model of the hybrid library in the subject areas of Business Studies and Economics, providing seamless access to a wide range of library resources regardless of physical form via a common Web based interface. The project consortium included the LSE, the London Business School and the University of Hertfordshire.

The working model became known as the "PIE" - a Personal Information Environment tailored to users' needs and permitting user customisation. Initially the portal-type technology needed for this was not widely available, but when it became available during the course of the work, the project was able to adopt it. A rapid prototyping approach adopted early in the project was successful in helping to gather early user feedback.

The PIE has provided a means of building personal information environments in a way which is not dependent on a particular library management system or institutional infrastructure. An independent library contact stated that "HEADLINE work on personal portals is of interest to us - we would like to have the ability to produce customised interfaces. This would be a real advance".

The PIE has been developed entirely within the project using freeware tools and components to permit transfer beyond the project partners' sites. HEADLINE did not see itself as a technically driven project. It favoured the use of Application Programmer Interfaces (APIs) and freeware rather than bespoke developments. This was a pragmatic approach given the short life of the project.

A modular approach meant that parts of the PIE could be used or exploited separately. Examples include the SHERLOC shelfmark and facilities locator system and the EEDD (End-user Electronic Document Delivery) pilot service, developed as a discovery-to-resource component of the PIE, which has been cited as an essential element of a proposed new document access service operated by the ex eLib Lamda Consortium which has been granted JISC funding.

Other notable outputs from HEADLINE included the following:

- A working Resource Description Model (whose level of complexity has been acknowledged outside the project as a more appropriate model than simpler "flat" models used in other applications)
- The Authentication Broker (based on existing user data to avoid duplication)
- The end user electronic document delivery prototype (EEDD)
- A working Z39.50 client
- A working WHOIS++ client to enable the use of the PIE as a front end to legacy databases.

Authentication was a bigger task than anticipated but some tools and papers have been produced for the wider community on this subject. In particular, the "Authbroker" tool has been a useful input to the DNER ANGEL project, which is taking forward work on authentication, personalisation and information environments.

In terms of transferability, the project stated that "We produced usable, stimulating and practical models including specific pieces of software with instructions. However it is clear that not all of the hybrid library work can be transferred as there are so many different library systems and different sets of demands. It's not a case of one size fits all". The inclusion of the University of Hertfordshire during the project selection process has been acknowledged as an important step in ensuring the transferability of the PIE to institutions with a greater undergraduate focus (compared to the London School of Economics and the London Business School).

HEADLINE included non library resources such as Web CT. This anticipated the work on MLEs and recognised the contribution of resources outside the library to learning and research support, an area likely to become more important in the future.

Institutional support was strong within HEADLINE, partly because senior LIS staff at the LSE play a significant role in the broader eLib/JISC environment. Despite this, there is still a need to help bridge the gap between the project team and operational staff in the library, a common theme expressed by all the projects. The project took a view that the objectives of HEADLINE (and all other externally funded projects in the library) should be linked to those of the institution and continually cross referenced.

4.1.3.4 HYLIFE

HYLIFE set out to "establish, test, evaluate and disseminate across UK HE a knowledge of operating practices for the hybrid library". The project concentrated on cultural and organisational issues rather than technological issues. It was co-directed by the University of Northumbria and CERLIM and also included the University of Central Lancashire.

HYLIFE tested their hypotheses in a variety of contexts - researchers, full and part time students, distance learners, franchised students, practitioners, differing subjects, different institution types and widely spread geographical locations (including the University of the Highlands and Islands). This variety was an issue in determining the level of granularity possible within different hybrid environments and also illuminated issues of transferability through real life testing experience.

By taking a number of different approaches HYLIFE came to the same conclusion as Headline that a "one size fits all" approach will not work in the hybrid library, at least within UK HE. The reason is that there are too many different requirements across institutions, courses, subjects and user types. In the view of the Project Co-Director it also showed that the universal subject gateway will not work, a finding which has repercussions for RDN work. Issues of scalability were also explored. The subject group emerged as the most scalable and economically transferable, even for larger institutions.

Working with a large research centre (CURDS at University of Newcastle) proved to be very informative as the researchers' approach to using the hybrid library turned out to be quite different to that of the librarians. Many practical lessons were learned in this area, some of which challenged librarians' knowledge of how users search.

Attempts to engage academic staff were successful in situations where HYLIFE could offer something relevant to their work. Showing a demonstrator which related to another course

proved to be of little value, even if it could easily be adapted to provide the required course material. Being unable to offer the full range of operational systems immediately tended to raise expectations which the project was unable to meet and this could have a negative impact.

The HYLIFE Toolkit of Techniques is now available from their website for use across a wider community. This provides a "how to" guide to support other HE libraries in developing their library provision, thereby taking the lessons from HYLIFE into implementation.

The emphasis on organisational issues highlighted the need to differentiate between fundamental practices which should be retained and those which are simply "old practice" and should not. The project co-director suggested that "there is a danger that we lose tacit knowledge and hidden away assumptions of underlying infrastructure/organisational issues in the traditional library which are still very much required in the electronic library".

The project evaluation work went beyond what was required by the eLib programme and employed a full time evaluation officer from the start. The formative evaluation framework proved difficult to establish at partner sites who would have preferred to do their own thing. The fact that projects are willing to go beyond the basic evaluation requirements and to challenge the approach for their own purposes is a sign of maturity and therefore a success for the formative evaluation process as a whole.

Partners began to plan their exit strategy 18 months before the end of the project, a strategy mostly based on local integration. This was considered to be more realistic than transformation into a national service. At the University of Northumbria the vice chancellor has been personally involved in the Steering Committee and took an active part. Institutional take-up has been good in HYLIFE, both in terms of commitment to longer term continuation (support for the Toolkit is guaranteed for 2 years) and support for the project itself while running.

4.1.3.5 MALIBU

MALIBU had a subject focus, developing examples of hybrid libraries in the humanities across three partner institutions – King's College London (KCL), University of Oxford and University of Southampton. The needs of humanities students and researchers for print based, manuscript and other non digital sources of information has a particular relevance for hybrid library developments and presents obvious challenges for resource access and discovery.

The project did not seek to develop new tools or resources but to integrate those already being developed, many of them funded by JISC. Key deliverables included the setting up of prototype hybrid libraries at each of the three sites, developing models for the hybrid library based on the experience gathered through these prototypes (covering organisation and management, staff development, user training, resource catalogue/discovery and delivery) and dissemination to the wider community.

MALIBU involved a number of specialist collaborators in the humanities area, thereby ensuring that communications with stakeholders were extensive. The collaborators were:

- Arts & Humanities Data Service (also located at King's College, London)
- CTI Centre for Textual Studies
- NFF specialised collections in the Humanities
- NISS
- The Office for Humanities Communications

The technical approach taken for MALIBU was to use the Global Information Gathering Agent (GIGA). GIGA is a single web based interface providing access to heterogeneous institutional and external targets - including digital data, large databases and OPACs - via independent agents which in turn communicate via a meta agent for one-stop searching. GIGA provides a flexible means for users to search only the targets they wish to cover and to prioritise where results should come from within their selected target sources.

A separate agent was developed for each target type, JSTOR, Google and Z39.50 agents. Z39.50 posed problems in that a slightly different approach was required for each Z39.50 target to obtain search results successfully. The use of agent technology permitted development work to be undertaken in a decentralised manner. Negotiations with each target provider were more time consuming and complex than envisaged which had a knock on effect for developing the agents. This suggests that there would be issues in scaling up this sort of approach.

Contacts made with information providers exposed a lack of awareness about the needs of academic information service providers. The user behaviour observation sessions run by MALIBU were also illuminating, particularly the differences noted between a librarian's approach to resource discovery and that of end-users.

The feedback from other libraries to MALIBU suggests a need for basic "how to" information and more time for informal information sharing between library professionals. More shared events such as the SCURL Spring 2000 meeting would have benefited the project in its dissemination objectives.

KCL will use the experience gained through MALIBU to develop and implement portal services such as Metalib, recently developed by ExLibris. Recent changes to local collection development work are also based on outcomes from MALIBU. In Oxford a key member of the staff for the new Oxford Digital Library Initiative has come from MALIBU and the search engine from MALIBU is part of a proposal to the Mellon Foundation for an international forced migration portal. In Southampton, MALIBU work continues in the evolution of an Electronic Information Services Wing for the main Library and in improving the accessibility of the Norman Del Mar Sound Archive using digital technology.

4.1.4 Technical issues

Many of the technical issues arising are discussed in the context of the project assessments. This section summarises some of the key findings. The Hybrids adopted contrasting technical approaches: some had a remit to develop an essentially electronic system while others made a practical attempt to explore the issues using more simple technologies in support of demonstration activities.

The rapid prototyping approach was used widely and helped particularly where projects were not technically driven. Early prototyping meant that results were quickly visible, made the promotion of hybrid libraries to end users easier and overcame possible problems with HL terminology. Some care is needed to avoid alienating users by overselling early prototypes.

The technologies used for developing the hybrid models were generally selected for pragmatic reasons, assuming that they would be easily transferred to other institutions. Open standard systems and freeware were prevalent in all projects apart from Agora which was based on the FDI VDX system. In practice, however, this capability for simple transfer has yet to be borne out on a broader scale.

A major issue in technical development was that the general university IT infrastructures, into which Hybrids will increasingly have to be integrated, are not developing at the same pace as

eLib work, particularly for "back-office" systems. Off the shelf products for online learning are, however, starting to deliver and this is likely to have an impact on future hybrid libraries work.

A lack of suitably skilled IT staff is a critical constraint to hybrid library work going forward. Teams just managed to cope, but all projects were exposed because of their dependence on a small group of IT experts.

At the beginning of eLib Phase 3, portals technology was not widely recognised nor available. This changed over the period of the programme and projects started to make use of this.

The issue of open freeware versus development of existing vendor systems were both explored and this was valuable. The BUILDER approach of using Microsoft products was not popular but had a clear rationale. The technology behind personalisation is very important and is also being covered widely in the commercial sector by applications such as My Yahoo and My.library. In authentication some useful new approaches were explored and demonstrated in practice. Progress in this area was fundamental to enabling personalisation of information environments.

4.1.5 Achievements

The consensus is that the hybrid library area contributed significantly to knowledge of how hybrid libraries work in practice and their impact on libraries and their various user communities. In relation to the objectives set out at the beginning of eLib Phase 3, the Hybrids have met all objectives in some measure and have produced additional benefits not explicitly anticipated in the call for proposals. The performance of the projects is now examined in the context of each high level objective in turn.

Establish a small number of exemplar / pilot hybrid library development projects

Working models have been successfully developed by all five projects and have been positively evaluated by a wide range of users. Rapid prototyping provided basic working models from the early stages of the projects which allowed a very user-focused iterative development approach which has clearly been of benefit to all stakeholders. Given the uncertainty over what exactly constitutes a hybrid library, the existence of working pilot sites has been invaluable in "selling" the Hybrids concept. Although there was strong support, the case was not sold to all outsiders and a few respondents had mixed feelings regarding the validity of funding hybrid work:

- "we could have done it without eLib. Too much was spent on Hybrids and Clumps"
- "I'm cynical about this area - it's what people should be doing anyway. However it's good to do it a national level. Funding gets the attention of senior management"
- "I worry about the concept of hybrid libraries - it needs to be reinvented - It's not a bolt-on. Maybe eLib is heading towards a cul-de-sac"

The exemplars have offered a range of informative views of the hybrid library, highlighting how similar results can be achieved through very diverse approaches as well as identifying areas where projects need to follow standardised routes. The number of exemplars produced was sufficient to allow interested users in the library community to compare and contrast. The alternative approach - developing a single model through a larger project - would arguably have found difficulties in gaining ownership across subjects and user groups. One project felt that they had not yet earned full exemplar status: "We've not had enough dissemination outside eLib to support exemplar claims - not a lot of libraries have picked up on what we are doing yet", but this appears a little pessimistic.

There were some expectations from outside eLib that this domain would provide working systems for hybrid libraries. This was unrealistic given the size of the budgets and relatively short timescales: "The expectation of well organised hybrid libraries was a bit ambitious for an R&D programme. If you interpret this as having them in place then we're not there yet".

There were very few working models of the hybrid library when eLib Phase 3 projects started, so eLib's achievements put UK HE at the forefront of international developments. The overall objectives for the area were a little vague, which suggests that the real aim was to explore issues in order to develop effective models.

Integrate a wide range of traditional / new resources as seamlessly as possible - Integration development work required for these projects was noted.

There is general consensus that breadth of coverage has been achieved at the expense of deeper integration issues. The complexity of the integration issues became evident as projects started to work on the practicalities of interoperability. The Interoperability Focus has helped to take forward the issues uncovered by the eLib projects.

Projects have produced pilot systems with a wide range of functionality and content presented in a coherent manner and demonstrated that, even with a limited amount of integration, previously disparate services and resources can be made available to users through a single interface. Projects have seamlessly covered access to many different types of resources such as OPACS, web resources, journals, archives, bulletin boards, CD-ROMs, audio-visual resources, Web CT teaching materials, grey material (reports, directories), contacts databases, statistics.

- "We learned lessons on integration - some areas did better than others - and we didn't get all the way down the chain to document delivery. Budgets and timescales were probably not sufficient to achieve deeper level technical integration"
- "A reasonably wide range of things were brought together - issues like interlibrary loan or document delivery didn't get covered. We'd need another 3 years for this to come together"

A recurring issue for integration was the relative roles of the hybrid library and the local OPAC / LMS. Projects perceived that library suppliers want their systems to be at the core of the hybrid library whereas others take the view that the OPAC or local LMS is just another resource in the hybrid environment. Vendors' product development in the hybrid area is only just beginning to produce new products so it is too early to judge how far the system suppliers will dominate future Hybrids work. Several attendees at a recent Hybrids dissemination event expressed the view that it was good to have a means to create hybrid interfaces outside the branded supplier environment.

Include results from earlier eLib work, the EU Telematics programmes and other national and international programmes

In general, projects have kept in touch with international developments by attending conferences overseas and receiving visitors in their local institutions from Canada, the US, Japan and Australia as well as the more passive routes of background reading and web user groups/ mailing lists. Overall, however, the prime focus of development has been in-house and UK based, rather than a systematic review and use of international results.

The MODELS work from eLib Phases 1 and 2 continued to have a strong influence in Phase 3, particularly in hybrid architectures. Many of the Hybrids referred back to the earlier document delivery and on-demand publishing work when developing services in their information environments. HERON was used as the basis for the BUILDER e-reserve pilot.

According to the Programme Director, "Framework V has produced some good work which might have been picked up but wasn't. We had hoped for more effort to get international involvement but were disappointed in the extent to which projects succeeded (or even tried) to achieve this". "We had hoped that projects would look to act as test beds for other international projects".

The corresponding view from the EU is that "eLib hybrid libraries work was very similar to what Framework Programme IV was doing although eLib was focused on demonstrators rather than working on the core technologies. There was no concertation with the EU regarding hybrid libraries". The HEADLINE project did re-use results from the EU DECOMATE project for authentication work.

Commercial products available from publishers and other suppliers will also play a key role

With its emphasis on implementation and working models, it was critical for library management system suppliers to be involved in the hybrid libraries area. This was achieved to a certain extent with the involvement of Fretwell-Downing Informatics in two hybrid library projects the relationship between Birmingham (ex University) based Talis and BUILDER.

At the beginning of eLib 3 it was not apparent that suppliers wanted to get involved in R&D in this areas, preferring a "wait and see" approach. Given that they were able to glean detailed information freely from project web sites, such as the Agora specification, the incentive for them to put in resources for development was not very strong.

A further obstacle to involving commercial suppliers was the extent to which their systems could (or rather could not) be integrated with functions like inter library loan and document delivery.

There have been questions raised about the validity of JISC funding commercial systems in a short term "research" programme. In the words of one of the Project Directors, "system development like this needs to be longer term and would have been done by FDI anyway".

Institutional embedding

There is evidence of institutional embedding in the Hybrids area. For example, the BUILDER team have gone on to form part of a Birmingham University corporate web team which has helped to keep the library and the hybrid library work at the centre of institutional web strategy. All projects have experienced active support and interest from their institutions including senior management.

The stage of integrating projects fully into the mainstream of operations has not yet been achieved. Two quotations from hybrid projects illustrate the reasons:

- "Project teams are set apart at the moment. How can we stop doing some things to make room for the new activities ? Will automation of some processes help"
- "We've been making a conscious effort - mostly unsuccessfully - to match projects with the mainstream library operations. This is often because the people we're trying to second on to the project work cannot be easily replaced in their normal role - managers can't cope with the impact of them being away from their normal duties"

This raises the more general issue of funding which underlies many of the factors limiting hybrid development. For many institutions, hybrid does not mean one form of resource (electronic) gradually replacing another (print). It means handling both types of media in parallel, with the added complication that electronic resources come in a huge range of types in addition to digitised text. This means extra effort and correspondingly larger budgets.

4.2 Large scale resource discovery (Clumps)

4.2.1 Characteristics of the domain

To make effective use of the full range of information resources available, users need to be able to search the catalogues of a number of institutions. With the increasing pressure on library staff for ever growing user numbers, it is necessary to provide effective facilities for the users to perform searches without assistance wherever possible. The problem is that the catalogues of different institutions are not directly compatible. Searches of this type therefore require one of two possible solutions to this problem:

- A 'physical' union catalogue which includes records from the holdings of all the institutions
- A facility which allows searches across existing catalogues, ie a 'virtual' union catalogue. The Clumps are an example of this approach.

The maintenance of a Union catalogue is a major task for many institutions. It takes considerable effort to prepare the data and updates can be required frequently. For example, inputs to the CURL union catalogue are needed weekly and it can take up to 2 hours to prepare input (an internal search is needed which has to be transmitted to the central catalogue). It may be possible to reduce the scale of the problem, but it will remain an issue. It is a problem for large institutions, but is a greater overhead for smaller organisations which may thus exclude themselves from involvement.

JISC had already funded activities in this area under earlier phases of eLib, in particular a study to examine a CURL OPAC. More recently, the RSLP have addressed these issues and the RSLG work funded directly by HEFCs will also address these issues.

The idea behind the Clumps is that regional or specialist subject groupings can create virtual catalogues by using a protocol known as Z39.50. If used with an appropriate access policy this would provide an improved level of service to users within the regional or subject group while improving the effectiveness with which the resource base is used. It is also possible that the Clump concept could be extended beyond the regional or subject base to provide a virtual catalogue at national level.

Given the potential benefits, the Clumps concept was clearly one worth testing. This is confirmed by the interests of the consortia who took the opportunity of the call. It should also be noted that there was considerable interest in Z39.50 in many sectors at the time of the call, but very limited implementation experience in any of them. At the start of Phase 3, Z39.50 was a new technology for interoperability and offered the potential for major user benefits.

The work of the Clumps is now an important input to the wider debate on union catalogues, currently focused on the UK National Union Catalogue (UKNUC) study which is expected to report shortly after the time of writing. It is thought that the end result is likely to be a mixture of the two approaches which may involve larger institutions acting as 'parents' to smaller organisations, associations of smaller organisations providing a feed in. Any national system is likely to remain concentrated on larger organisations which will leave access to the holdings of smaller organisations in the hands of 'clump like' technologies.

4.2.2 Objectives

The specific aims of the eLib Phase 3 Clumps work were set out in JISC Circular 3/97 as follows:

- To encourage the Clumps to form
- To provide the unifying organisation, standards and brokering services
- To work closely with the emerging national agency for resource discovery
- To kick start critical mass of use of Z39.50 by funding a small number of pilot virtual Clumps
- To produce model technical and other agreements to allow subsequent Clumps to be justified regionally or by subject
- A long term aim to see large scale Clumps extending to a truly national scale
- Not to include long term funding of the activities.

It should be noted that the objectives relating to critical mass and national scale implementations were very much programme aims and were not explicitly taken up as objectives at project level.

The selection criteria for the projects included the following:

- Diversity of institutions
- Diversity of systems
- Demonstrable technical competence
- Existing organisational logic
- Benefits beyond the immediate region
- Contributions from the region (staff, equipment etc)
- Quality of the catalogues

4.2.3 Project assessment

4.2.3.1 Overall

Four Clumps projects were funded under eLib Phase 3. Three of these were regionally based projects and the fourth was subject based. The projects selected are summarised in Figure 4-1, which also shows the relative distribution of funding to projects.

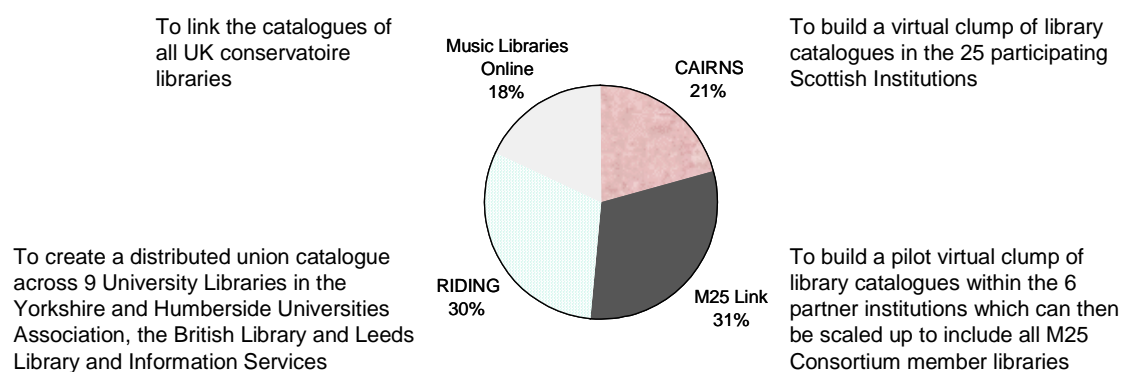


Figure 4-1: Funding breakdown of Clumps projects

The three regionally based Clumps were all based on pre-existing consortia. In the case of the M25 Link, this dated back to 1993. The CAIRNS project was centred on the Scottish Consortium of University and Research Libraries (SCURL) while RIDING was based on the Yorkshire and Humberside Universities Association (YHUA).

The funding of the Music Libraries Online project provided balance in that it was a specialist subject based approach. To some extent, the fact that the only subject clump was also the

smallest was partially offset by the operation of subject based sub-Clumps within the regionally based projects.

4.2.3.2 CAIRNS

The CAIRNS project developed from existing cooperation between Scottish HE libraries. This was manifested through SCURL whose remit covers University *and* Research Libraries and therefore covers a wide range of education libraries.

SCURL had been discussing the implementation of Z39.50 and had been canvassing institutions about whether they would use Z39.50 compatible systems in their next procurement. There was also associated work on indexing at the various sites – some systems were site dependent.

The libraries thought that this work would be useful, but there was not enough institutional commitment to achieve critical mass without external support. The organisation was therefore already in place, with some restructuring, but it was not possible to move beyond the discussion stage without the JISC support.

The JISC opportunity was not unexpected. There had been a broader background debate on these issues, although it was interesting to note that much of this was technically oriented. In the past, most of the above activities have been done on a best efforts basis. Now, and partly due to the work on CAIRNS, there is a SCURL funded development officer in place to oversee developments.

At the start of the project, the CAIRNS consortium envisaged that the project would result in a viable service. This outcome was not achieved to the extent that had been hoped because the technology, and thus the commercial products based on it, were not found to be as reliable or capable as would have been expected.

An important technical lesson learned by the consortium was the limited level of variability in targets that could be supported. This meant that a search could not be configured with a reasonable expectation of a consistent outcome. The responses to target operations also suggested that the field testing of many commercial products was not adequate. The circumstances of the applications in CAIRNS were clearly more diverse than the product testing regime had envisaged, with the result that unexpected returns were received in a number of cases.

The project response to these issues was to try to find suitable approaches to the very different target responses received. Looking at how to find common ground between the different offerings and then to restrict the outputs to those levels which could be provided reliably was a major task. Even with the same product from the same supplier, there were important differences in the results. These may have resulted from the installation procedures applied.

Major differences in local practices were also highlighted by the project, even when there was conformity to the Bath profile. This suggests that the Bath profile may not be comprehensive enough to ensure success. One consequence of this was the establishment of the CAIRNS Catalogue / Index Working Group. This group, which will remain operational after the end of the project, will look at harmonisation issues. These assessments will be needed whatever future approaches are adopted. This group is also open to any Scottish institution with an interest.

An assessment of the project was that Z39.50 and associated software is highly capable, but the real problem is to make the results reliable and repeatable across a range of targets.

Those involved in the project have learned a lot about how Z39.50 operates and how the targets operate.

Despite some of the above comments, the project was found to be very useful. The project activities were all things that they had wanted to do, but would not have been able to without external support. It also provided an external reference point and stimulus towards greater institutional cooperation. Most of the institutions involved needed this impetus to free them from their local issues which usually have to predominate.

The project view of the future of this area is that it will go one of two ways. Either

- It will take a long time to develop the existing software because the resources applied to it are small. There may then only be 1 or 2 vendors and the approach may not be sustainable. – or
- Like the WWW, someone may define a completely new and unanticipated approach.

One of the overall conclusions of the project team is that until the gateway software is as good as the local OPACs or Internet searches, the use of Z39.50 will not be accepted by users.

4.2.3.3 M25 Link

The M25 Link Group consists of 39 HE Libraries in the area around London broadly defined by the M25 orbital motorway. The consortium started in 1993 with an aim to develop cooperation and sharing so that they could provide a more comprehensive service. One of the initial tasks of the consortium was the provision of an on-line user guide to the M25 libraries. The consortium submitted a proposal for a Phase 2 project to cover this activity which was not successful.

The consortium decided to pool resources and fund the work themselves, leading to the emergence of the M25 web guide in 1996. This was an innovative service and won an award from UCISA (The UCISA Web award in 1996). The functions included a search facility by subject and location with basic information on how to get to a library and its access policy. Having achieved this with no external funding, the Phase 3 Clumps call provided an opportunity to go a step further by linking the catalogues of the member institutions.

The project has made good progress with implementation and is developing into a service. It was originally thought that it would take 2 years to get the first 6 libraries and serials together, then another 2 years to get the other M25 libraries involved. In fact, the consortium are hoping to achieve this by July of 2001 and are therefore ahead of schedule in this respect. Five of the sites are questionable because of difficulties in handling the locally used library management systems, but there should at least be 34 out of 39 sites operational. 31 sites were on test as of March 2001.

The project is based at the LSE, but there is no direct influence over the project sites and so all of the work has to be done by invitation. The fact that the implementations are being achieved is therefore evidence that the member sites see involvement as positive. This is supported by evidence from evaluation focus groups that users do see the service as valuable. The importance of the local library software in influencing the level of involvement is illustrated by the cost of adding the system to the Clump. This varies from almost nothing in some cases to an estimated £10,000 in another case.

The M25 Link project has also promoted aspects of the Clumps concept with the suppliers of library systems for its member organisations, and in particular the use of the Bath profile. Of the seven different suppliers to members of the consortium, four have been approached with

a view to have them support the profile in their software. Of these, two are hoping to include it in their library management software, one is supportive but would like resources to implement and one is interested but needs a stronger business case (ie, they will act if all their competitors do likewise). The project is hopeful that 75% of its libraries will be compliant with the Bath profile.

A related activity has been the production of blueprints which show the member libraries how to implement the M25 Clump with their local system. These have been developed with the cooperation of the library system suppliers and in the longer term could be used to extend the project knowledge to a wider audience. The project has had requests to make these blueprints available to those outside the M25 area. This would really need additional funding because the blueprints would need to be generalised.

As with the other Clumps projects, the M25 project has had to address a number of technical and organisational issues in order to move towards an effective service. One of the problems was a finding at the start of the project that Z39.50 searching can be very slow. In some cases this was traced to poor system set up. Generally, this problem has now been overcome through the work on Collection Level Descriptions (CLDs) which allowed the pre-selection of the search targets, thus speeding up the search. This work is now being taken forward in a recently issued RSLP call. With hindsight, Collection Level Descriptions were not covered as much as they should have been, but the importance of the issue emerged during the course of the project. This remains a complex area because user requirements vary so dramatically.

A similarly important area for the project was the handling of serials information. This was an original selling point for the project and remained an emphasis. Prior to the project, access to serials information was difficult. It still is a difficult area, but there has been progress achieved partly through the inclusion of serials information in the Bath profile. The ZBLSA DNER project is now looking to progress this area.

Access policies play an important part in the activity. Initially a reference policy was posted, and was later supplemented by a borrowing agreement for academics and researchers in the M25 area – the catalogue is key to support this.

M25 Link Consortium has recently voted to fund the service from the 1st August, 2001 when the current project formally ends. This funding will not maintain the full project, but a subset to provide for the maintenance of the virtual union catalogues. This reflects the fact that it is now seen as an important type of service by the consortium. Benefits to individual institutions are seen as greater functionality and improved cooperation. Given that the consortium is the biggest HE conglomeration in the UK, this reflects an important contribution towards the critical mass sought by the original programme call.

The next stage of developments include possible links to document delivery services such as Lamda or more general Inter Library Loan (ILL). The work is not at the stage of supporting ILL yet and would need additional external funds to develop this.

The project suggest that system suppliers now regard Z39.50 as more important. The work on the Clumps projects has certainly helped with this process. The Clumps are well known, especially in the US and are well thought of as making important contributions to the Z39.50 debate.

The M25 Link work remains a pilot and has not been promoted as a service to date. It has been demonstrated for promotion but is awaiting updates to the interface before full release. This work now feeds into the UKNUC debate, although a number of key questions remain.

The project also commented on the dissemination issue. This was found to take considerable resources and this affected the level of technical work possible. More recently, this has been reduced to some extent to ensure that the technical work can proceed, ie that there is something concrete to disseminate. It was thought that an end of eLib conference would have been valuable as there is a general issue of ensuring that others could fully benefit from the work and knowledge gained.

4.2.3.4 Music Libraries On-line

Although the work with JISC was new, music colleges were developing an interest in the union catalogue concept at the time of the call. Four of the London colleges had started to talk to systems suppliers. As a result, the arrival of the JISC circular was timely.

The consortium was widened to provide sufficient coverage for a valid proposal. As part of the project selection process, Fretwell-Downing Informatics (FDI) were introduced to the consortium as a technical partner. FDI provided much of the technical input to the proposal, ultimately writing many of the technical sections and similarly helped to draft the technical specification.

The project has achieved an operational clump within the consortium consisting of 9 conservatoires and 4 university sites. Not all partners were involved because of technical problems and limited facilities at some of the sites. Public libraries were not included for a mixture of technical and organisational reasons, including difficulties with local technical support.

Initially there were very different cataloguing approaches across the consortium. The project encouraged an increased commitment to provide greater consistency as part of a project induced change in the basic attitude to standards. This is part of an overall cultural change.

The regional approach makes the access problem easier. It was found to be harder to achieve a consistent approach for subject based approaches. In terms of access problems, it was found to be important to publish individual policies and links on-line.

The project addressed issues of CLDs and bibliographic standards. Smaller, specialist collections, which are not on COPAC or the BL OPAC still need to be accessible. Musical performance material is therefore a good example of the types of applications for which clumping is well suited. Similar cases can be made for other 'minority' subjects and accordingly the MLO team have had talks with examples as part of the dissemination process, including

- Veterinary
- Art and design
- Dance and drama

International access is also an issue for the music because it is not restricted by language.

Bibliographic standards were also a success area for the project. The initial aim was to achieve searching with many access points. Most Clumps are mainly title based, but a more complex approach was needed in this case.

Links to ILL were also explored, though not implemented. The nature of the link to the BLDSC made it difficult and this link does not fit easily with a clump. In particular, the approach to failed requests makes this difficult. There was insufficient time to do this properly, partly because the VDX – ILL module was too complex to be adapted within the scope of the project.

The system was tested in terms of search and retrieval, but the effects of heavy traffic use were more difficult to test. Reliability was a problem in some cases because the local servers were small. There were no major technical discoveries for the VDX software, partly because of the lack of a technical officer. There was an overall difficulty within the project with the use of the FDI VDX software. During the course of the work, it was not found to be possible to implement the VDX effectively and an external consultant was brought in to provide support. This resulted in the VDX effectively being replaced with the JAFER software produced by the consultant.

Evaluation of the project is ongoing, but the system was found to be valuable by users. In a number of cases bibliographic information is enough to satisfy their requirements (eg to check references)

There was a strong emphasis on dissemination during the early stages of the project when there was little to show for the development work. This may have been slightly counterproductive and raises a more general issue of 'disseminating on the go' namely at what stage should the users be involved:

- Early involvement provides useful feedback, but can put people off if the service is very poor
- Leave it too late and publicity may be fighting a losing battle

The project has concentrated on a specific user community and its impact has therefore been on its intended user base. Links with other specialist communities are a positive development. There have also been impacts on the commercial providers who have developed their products through the project. Greater cooperation between participating organisations has been achieved, but this has not led to cooperative purchases yet.

The project team are looking to take the work forward after the project. The conversion of catalogues would be a huge task, but there are suitable breakpoints where this could be speeded up. An example would be during the required conversion to MARC 21. This could be a big step forward.

Without additional support, the work is likely to be frozen in time because it cannot be done on a self funding basis within the partner institutions. The risk is therefore that momentum could be lost. The model could be scaled up, but at present prior to the feedback from UKNUC study, the project feels as if it is ending in a vacuum. This is partly because DNER is not seen as having taken up the Clumps work in its own right.

The MLO project was funded at a relatively low level, being the smallest of the Clumps. There has been some discussion about whether the level of funding was adequate and the project suggest that it limited experiment and restricted work in areas such as scalability and application to other subject areas. The thinking was that the Programme Office should perhaps have seen that the budget was very tight, reflecting inexperience of this type of work, and modified it, maybe through the pre-marking service.

One of the findings of the project was that for Clumps applications, much of the work that MLO has done provides general lessons which could readily be transferred to assist with the implementation of new protocols if these emerge.

4.2.3.5 RIDING

The RIDING consortium was based around the Yorkshire and Humberside Universities Association (YUHA) grouping and sought to establish a clump based on the YHUA

membership. The project was led from the University of Sheffield (by the same group running the UKNUC study) and included Fretwell-Downing Informatics as a partner.

The project appears to have had some difficulties during the course of its operation, but to have overcome these to arrive at a system which members of the YHUA find valuable. It has also made some important contributions to the area, particularly in the development of its access policy.

A management issue which arose early in the project was a lack of communication down the chain. When the consortium came together, commitments were made by the heads of the libraries on behalf of their organisations. When the project was awarded and went ahead, many of the local librarians (especially those handling ILL), had not been briefed and therefore did not know what RIDING was all about. The result of this was a lack of local cooperation which made the project more difficult. This problem was not only at the start of the work, it persisted through the whole length of the project. Internal communication within consortia is therefore the issue, particularly diffusion down the hierarchy within organisations.

The technical side of the work involved FDI as part of the RIDING team. There were some delays linked to the VDX software in the early part of the work which caused problems and were raised to a higher level in parallel with other projects dealing with FDI. The relationship with FDI was found to be difficult early on and there was some awkwardness, but on the whole it went smoothly.

The available funds were also used to support an evaluation of the RIDING work by the University of Northumbria Library school. This work is in progress at the time of writing and involves the following elements:

- Focus groups
- A survey
- Interviews with the Library Directors within YHUA

Clumps were found to be successful in their own right, but their scalability is still an issue. It is notable that librarians involved in these have found them to be very helpful to users at a practical level. RIDING have not done a full costing on the Clumps and the willingness to use these methods in different institutions. For full scale use, it would require local funding to support the Clump, national funding is only likely to be available for national level activities. The level of local support is not known.

From a RIDING perspective, the programme objective of achieving "critical mass" was not exactly what the project set out to achieve, at least not as a first stage. The aims of RIDING were more to demonstrate what could be done and to test the issues, particularly the practicality issues with the Clumps approach.

The handling of access issues as embodied in the 'RIDING Access Policy' is one of RIDING's major achievements. The access policy is a borrowing policy across the YHUA. Everyone who is an accredited user locally can then be accepted in libraries across the YHUA region. This policy may have happened anyway, but it happened much more quickly because of the impetus created by RIDING.

In spite of the RIDING access policy and the cross searching capabilities there has been only limited additional use of resources noted. This is mainly due to publicity issues. It took quite a while to get the systems up and running (as a result of getting the software going, installation at the various partners and the need for the access agreement). This meant delays in being able to publicise the system. In general, more publicity is still needed.

RIDING had been continued over the last year (to April 2001) within the YHUA using unspent funds from the earlier project work, this was agreed with JISC. Much of the original team left in Feb / March of 2000. These funds were also used to cover the evaluation work referred to above.

4.2.4 Technical issues

A feeling that has emerged in some quarters is that the technical issues, while not easy to solve, are relatively black and white. It is the underlying issues of policy, access and administration such as reciprocal agreements that are ultimately the most difficult to address.

On the whole Z39.50 is seen to be a valuable approach by those who have used it in the Clumps, particularly if viewed pragmatically. More generally, there have been many changes over the three years of the programme and it is much more widely used now. Systems suppliers are developing Z39.50 systems. There is nothing at present to challenge it and if there were, it would take three to four years for a new protocol to become established. Not all librarians share this view of Z39.50. Some consider that the imprecision and unreliability of the searches, combined with a lack of holdings data, compromise the value to many users. CAIRNS found that only limited target variability could be supported. The Clumps did try to address the problems of a lack of holding data but in general it was only available with certain combinations of search and target systems (eg the Epixtech used by CAIRNS used with Epixtech systems and VDX used with Innopac systems).

A feature of Z39.50 is the use of more specific profiles to assist with different application types. For example, a Catalogue Interoperability Profile has been promoted by the Committee on Earth Observing Satellites (CEOS) to assist those searching for specific imagery from a range of Earth observation satellites. The interoperability issues encountered in the library context have been approached using the Bath profile, which emerged from a meeting at UKOLN in Bath with representatives from the UK, US, Canada and EU. This profile involves recommendations for the set up of the Z39.50 server which help to ensure compatibility and thus consistency in the results received. The 'depth' of the recommendations in the Bath profile (ie the extent to which consistency is required) was also highlighted as an issue for consideration.

Europagate software was tested by the Clumps, particularly M25 Link, as an attempt to link the Clumps together in a central server based model. This trial was abandoned because too many cryptic error messages were returned from the searches for the implementation to be considered acceptable for users. The message here may be to walk before you can run. The regional consortia felt that much of the value accrued at the consortium level in the short to medium term.

A number of testing issues arose from the work. One such problem was that in some cases where searches failed, the local site reconfigured the search and send back results which were then inconsistent with the normal response. Here it would have been better (for the research) to get a null or void response. The Clumps work also highlighted the fact that the field testing of commercial products was limited and raised a number of new issues which had not come to light under more controlled conditions. Specific installation issues were also found to be very important.

4.2.5 Achievements

To encourage the Clumps to form

The regional consortia involved in the Clumps projects had close associations before eLib Phase 3. There is little doubt, however, that the Clumps would not have proceeded at the level they did without the JISC funding. The Music Libraries On-line group may have

developed as a much smaller group because they were also considering work in this area, but again, the eLib funding was the key stimulus.

To provide the unifying organisation, standards and brokering services

One of the most successful aspects of the Clumps work has been the fact that they have addressed many of the less technical issues such as access policies, collection level descriptions and bibliographic standards. These form an important part of the organisation necessary for improved institutional cooperations of this type.

In terms of standards, the Clumps' efforts to develop and implement the Bath profile are a necessary component if this type of approach is to become fully operational.

To work closely with the emerging national agency for resource discovery

There has been little evidence of such interactions in the contacts with the projects. This may reflect the fact that the RDN was initiated by the JISC Circular 10/98 and not launched until about a year later. This means that the Clumps projects were well underway by the time that the RDN was in place.

To kick start critical mass of use of Z39.50 by funding a small number of pilot virtual Clumps

There is a wide range of views as to whether the Clumps projects managed to kick start the critical mass of Z39.50 use. This is partly due to varying interpretations of what it means to 'kick start' something and when 'critical mass' is achieved.

There is no doubt that the Clumps projects have provided considerable impetus to the use of Z39.50. A sizable proportion of the UK HE sector has been linked by the Clumps projects and many of the issues arising have been addressed. Whether critical mass has been achieved is more difficult to say. Part of the problem lies with the inherent limitations of Z39.50 which is clearly more of a practical aid than a perfect solution. Another important factor is whether Clumps are viewed as complements to or competitors for union catalogue solutions.

To produce model technical and other agreements to allow subsequent Clumps to be justified regionally or by subject

Many of the LMS suppliers have cooperated in making their systems more compatible with Z39.50 and some have made moves towards implementing the Bath profile. If this type of development can be continued, improved target specification may complement improved search systems to improve the validity of the Clumps approach further in the future.

An important outcome of the Clumps has been the development of the RIDING Access Policy which provides an important model for other Clumps to build on. Although RIDING were prominent in this area, the other Clumps also made important advances in these areas.

Apart from some problems obtaining the cooperation of library staff 'at the coal face' operating some of the Clumps, this aspect appears to have had a positive outcome.

A long term aim to see large scale Clumps extending to a truly national scale

This objective reflects a possible outcome of the work at the start of eLib Phase 3 which was that the Clumps could be linked to form a virtual union catalogue for the UK. It was a *programme* objective, but was not reflected explicitly in the individual *project* objectives. Various attempts were made to explore this possibility, including the application of the Europagate software, but these were not successful. Many of the organisational findings of the work would enable a more national approach to evolve, but with current technology it is unlikely to develop in the near future. When asked about this objective, some of the projects

indicated that Clumps were more suited to a regional approach in any case, since physical access to the resources is still the main access method once a resource has been located.

Not to include long term funding of the activities.

Two of the Clumps, the M25 Link and the RIDING group are continuing the operation of their Clump beyond the end of the project using their own funding. The continuation process is also evident with CAIRNS where the on-going issues are being handled through the CAIRNS catalogue / index working group. In the case of the Music Libraries Online project, self sufficiency is less likely, partly because the organisations involved are smaller. This raises an important issue because in many ways it is access to the smaller organisations' holdings that has most to gain from a Clumps type approach since they are least likely to become part of a greater union catalogue.

In summary, the following points can be made:

- At the outset the best way forward was unclear.
- Progress has been slower than expected and the aspirations to build at national level were very ambitious and have not been realised.
- The process was more complex in reality than had been anticipated.
- Physical Union catalogues will take years and large amounts of money. Endlessly enlarging the OPAC may be just as difficult as developing the Clumps.
- Overall, there is a need to take a flexible and pragmatic approach. It is possible that Z39.50 may be effective enough if seen in a more pragmatic light.
- One of the drivers for this activity is the ever increasing pressure on librarians due to the large number of students.

On the whole, Clumps should be viewed as successful projects in relation to their own objectives. The logic of the approach, flexible linking of catalogues to form a much larger whole, appears reasonable and it was right to try it. The Clumps projects have not only addressed many of the key technical issues, but equally as important have developed access policies, collection level descriptions and started to tackle the issue of serials, something taken on by the DNER. Even if this type approach does not form the flagship approach of the future, it is likely to be needed for finding more awkward items.

The results have clearly informed debate about future developments through UKNUC and related studies. The DNER is also picking up on Z39.50. The outputs do, however go beyond this. Perhaps the most important comment is that institutions are now proposing to fund the continuation of the clump projects from their own resources. This reflects the pragmatic value of the activities to these institutions and is one of the key tests of a successful development project.

As a footnote, it is important to note that the lack of cataloguing for serials is regarded as seriously failing the academic community. The Phase 3 project which made most progress on this was the M25 Link. JISC and RSLP are now working together on a joint study to take this forward.

4.3 Digital preservation

4.3.1 Characteristics of the domain

Digital preservation is a 'process by which digital data is preserved in digital form in order to ensure the usability, durability and intellectual integrity of the information contained therein'². In the early stages of electronic libraries, this tended to lag behind electronic cataloguing and document delivery. This partly reflects an endemic problem with preservation; most people think it is an important task that someone else should do. Now that electronic journals and delivery mechanisms have become more prominent, the issue of digital preservation has also been brought to the fore. In fact, the development of electronic journals, including those developed by eLib, would be compromised by the lack of a longer term strategy to ensure the preservation of the material published in them.

Issues of digital preservation have emerged in a number of areas over the years, but one of the most demanding pioneers has been the field of satellite Earth observation. Here the use of digital rather than photographic imagery resulted in datasets which were very large for the time (from the mid 1970s onwards). The value of these datasets lies partly in their ability to provide consistent records of change over time which means that preservation is important. Over the years, this has meant numerous warehouses full of high density digital tapes which have to be periodically turned by hand to prevent drop outs. Many of the issues of preservation such as selection, media migration and metadata have thus had to be explored in this field. It is therefore encouraging to note that some of the models developed in this field have been adapted and used within the CEDARS project (perhaps offsetting a few of the Programme Director's concerns about insufficient uptake of external developments). This could also be regarded as fair exchange for Z39.50 which emerged in the library domain and has been picked up by the space community to aid searching.

Preservation was recognised during eLib Phases 1 and 2 as an important issue for JISC. A joint JISC / British Library workshop was hosted in November 1995 which helped to establish preservation as a key component of the FIGIT strategy. This led to a series of preservation studies under the supporting studies programme area which were led by the British Library Research and Innovation Centre (BLRIC). The National Preservation Office was also a collaborator on these studies. These studies recommended developments in the following areas:

- Piloting university / publishing archives
- Building cost models
- Exploring media and data type issues
- Developing preservation skills

The value of the work was reinforced by an Research Libraries Group (RLG) study reporting in 1998 entitled 'Digital preservation and requirements in RLG member institutions. This found that 'policies and practices for digital preservation are underdeveloped in member institutions, especially given the increasing prevalence of digital materials'.

4.3.2 Objectives

The objectives for the digital preservation area as expressed in the 5/97 call were to develop a framework for digital preservation. This involved developing concrete recommendations for the following elements:

- Legal agreements

² Kelly Russell, June 1999 'Digital preservation: Ensuring access to digital materials into the future'

- Access control
- Metadata requirements
- Selection criteria
- Standards issues
- Good practice guidelines, eg methodologies for archives / depositories

Other key elements of the call were:

- The importance of collaboration (with NPO, legal deposit libraries and international projects)
- Take account of work in the British Library, Arts and Humanities Data Service, Essex University, the Research Councils and the NFF
- Serious institutional commitment to continue working in these areas beyond the end of the project

In response to the call, the CURL based consortium (CEDARS – CURL Exemplars in Digital Archives) proposed to ‘address the strategic, methodological and practical issues which will provide guidance for libraries in best practice for digital preservation’.

4.3.3 Assessment and technical issues

The 5/97 call envisaged only a small number of preservation pilot projects and in fact only one, CEDARS, was selected. The project initially ran from 1998 to 2001, but has now been extended for a further year into early 2002. CEDARS was conducted under the overall direction of CURL and was based at three lead sites, Leeds, Oxford and Cambridge. It also sought to extend the scope of involvement through dissemination and substantial non CURL representation on the advisory board. Evaluation tests sites at the University Libraries of Birmingham, Exeter, UCL together with the Birmingham Public Library, MIMAS and the British Library extended the scope further. CEDARS certainly achieved an important objective by becoming a high profile project and thereby bringing these important issues to a much wider and influential audience.

Project deliverables were broadly in line with the aims of the call, namely to produce the following:

- Guidelines for policy development
- Testing of the technical and organisational feasibility of the selected strategy
- Methodological guidelines on how to preserve different classes of digital material
- Analysis of cost implications

The inclusion of this area into the eLib Phase 3 appeared to be something of an afterthought. Nevertheless it is a very important area. Huge volumes of data are now being produced in electronic format and it is very important to consider how these will be preserved and kept accessible.

CEDARS adopted the OAIS model specified by the CCSDS (Consultative Committee on Space Data Standards) as a basis for its own development of functional model for HE. One of the advantages of the OAIS model was that it also addressed issues of metadata.

Preserving and maintaining access to digital material can be expensive since it requires commitment and resources to organise information and migrate to new media where required. The project attempted to address these issues and found part way through the project that this was going to be too ambitious. As a result, the project concentrated on identifying the elements needed to specify likely costs to provide the basis for a future model and considerable detail has been provided on this.

Collection management guidance and selection were two other areas addressed by the project. Selection in particular continues to require more consideration and CEDARS are promoting an RLG / JISC workshop on this early next year.

CEDARS has also made advances in developing a more standardised vocabulary for this area of work. This is linked to improved understanding of the issues in areas such as the difference between long term preservation and preservation for continuous access. Legal issues start to emerge if long term preservation is linked to cheap or free access since this starts to represent a threat to their revenues.

The partners in the project provided complementary contributions. Leeds University led the technical development work while Oxford and Cambridge brought their experience as legal deposit libraries to bear on the issues and this has been of considerable practical benefit to the project.

The project is timely in that it is informing the debate about a system for legal deposit in relation to electronic items, which only exists at present in the form of a voluntary code. The British Library are working with publishers on developing this code, but the issue of access remains key to the debate and it is important that the HE sector has a clearly developed view on this subject. The role of CEDARS is therefore very important.

Outputs from this area included awareness raising, international contacts (eg US, Australia) and raising standards as an important issue. Preservation issues are now being taken up in the context of the DNER. This provides a national focus for the activity, picking up the CEDARS issues as a matter of policy. The British Library is also looking at this area in terms of a deposit scheme and links here remain an awkward issue, although they have improved considerably during the course of the project. SCONUL has, in its own words been hands off about this and looked to JISC to experiment. They were pleased to see HE involved in this area.

One interesting point of note here is that other eLib projects are not prominent among those who have taken up the lessons of CEDARS.

4.3.4 Achievements

Recommendations were sought in the areas of legal agreements, access control, metadata requirements, selection criteria, standards issues and good practice guidelines. These areas have been addressed by the project and valuable output has been produced.

CEDARS has a very high profile and has rightly raised the profile of preservation. The Digital Preservation Coalition has been a valuable step towards bringing those with interests in this area together and involves groups such as the Research Councils who have very complex preservation requirements. The Preservation Forum now exists and there is a sense of ownership of this issue across library community now.

The EU reports that there has been collaboration between CEDARS and NEDLIB EU project. This has emphasised the need for more work on cost models.

By informing the debate from an HE perspective and achieving high level recognition, CEDARS has served the HE community well.

4.4 Projects to services

4.4.1 Characteristics of the domain

Of the eLib projects continued from Phases 1 and 2, only two have been included in Phase 3 because they were sufficiently different to warrant evaluation under the Phase 3 heading. Projects such as NetSkills, EduLib and EDDIS also received continuation funding but are not considered as part of this review. This summative evaluation therefore covers only HERON and EPRESS.

The reference document for the projects to services area is JISC Circular 2/97. Bids were invited from projects with well developed exit strategies to apply for "limited funding" to support the transition from full central funding to zero funding. The review and selection process was covered by CEI and CALT. Funding for up to 3 years was available - although the expectation from JISC was for shorter funding periods - and there was a preference for funding on an underwriting basis.

Projects were required to produce business plans indicating potential for external revenue streams, preferably in the short term.

Circumstances under which bids would be accepted were:

- Transitional funding to help with the implementation of an exit strategy
- Funding for an extra year to realise original project aims (in exceptional circumstances)
- Funding for a service which the community requires but which has little prospect of revenue covering its costs (in exceptional circumstances)
- Funding to continue the aims of the project but by another means

This was a relatively novel area for JISC support with only a few previous models to emulate in the HE sector - eg Ingenta (from INFOBIKE). This was the first time that JISC had explicitly issues calls for such transition funding.

4.4.2 Objectives

The call for proposals document reviewed all eLib Phase 1 and 2 areas and analysed possible options for new services in each area - as well as clarifying where funding would NOT be forthcoming. For existing eLib projects then, the prospects for further funding were reasonably transparent. The possibility of funding an electronic journal support service was explicitly mentioned - hence the EPRESS proposal.

In the On Demand Publishing (resource bank) area where HERON was successful, the aims were to seek further reductions in the costs and time taken to deliver; to involve more institutions to share costs further; to provide an expanding resource bank of materials from various publishers with subject classification and searching. The ready availability of copyright cleared digitised materials "should promote possibilities for substitution and hence the creation of a market".

The final distribution of funds between the two projects considered is shown in Figure 4-1.

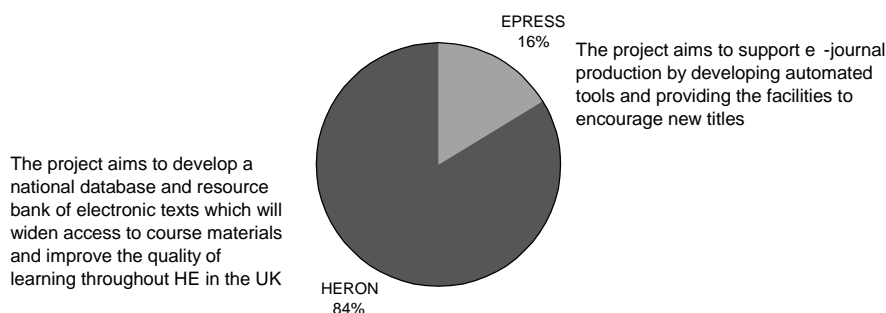


Figure 4-1: Distribution of funding for continuation projects

The two projects examined are considered separately. The summary section concentrates in the general transition issues provided because the projects are linked by funding mechanism rather than explicitly by theme (although there are some common areas).

4.4.3 Project assessment

4.4.3.1 HERON (HE Resources on Demand)

Objectives

The HERON project was set up specifically to offer improved access to recommended study materials using alternatives to traditional library provision, widely regarded as inadequate to cater for course requirements and the emerging student markets. HERON offers a one-stop shop for copyright clearance and delivery of electronic texts which HEIs then deliver to students through electronic short loan collections and/or Managed Learning Environments (MLEs).

In this sense the project was trying to anticipate new ways of supporting teaching and learning for new user groups, creating new services for a new or changing market. The achievements of the project in moving towards a self sustaining service should be viewed in this light. In the commercial sector the new product in a new market approach is more difficult than, say, a new product in established markets. In addition, the partnership producing the service is also a new business entity, making for a very ambitious proposition.

The project was joint funded by Blackwell Retail Ltd and JISC. Academic partners were University of Stirling (lead site), Napier University and South Bank University. Three years' funding for HERON was agreed and the project also received a Digitisation Subsidy under the 5/99 call to help enhance a resource bank.

The project has recently been awarded additional funding for a fourth year with a view to ensuring delivery of service to the HE/FE communities at affordable prices. The focus of the continuation is on a transition period with HE partners only to support existing users and work on improving the existing service delivery. A Commercial Development role will be established to explore new homes for HERON in the future within commercial services.

Assessment

HERON has established a national level service, has helped others to set up local services and has informed the community and publishers / rightsholders about the practicalities of e-reserve. This section examines some of the key issues raised by the HERON project with a particular emphasis on the difficult task of moving towards a sustainable service.

In terms of moving towards self sustainable service, two comments from the project set the scene:

- "Moving to a national service scale has major legal implications - the risks for all involved are much greater than just for a project which means more legal work to cover all the bases."
- "HEIs - even the eLib ones - are still experimenting. Things like HERON are not in the mainstream yet so it's difficult to persuade library staff to promote them. This has a huge impact if you are trying to become self sustaining in just 2 years. It's difficult to demonstrate the value of HERON when the market is not ready for it " - HERON Project Director

The main barriers to self sustaining status are the level of charges set by rightsholders, which are perceived to be too high for large scale conversion to electronic delivery. HERON has explored different models for pricing however publishers have opted for those most likely to protect their revenue rather than the Library substitution payment model. Any move to a mixed economy is unlikely to happen within the Phase 3 funding.

Publishers are still reluctant to give up direct contact with HE customers to an intermediary organisation such as HERON. With the success of future online publishing businesses firmly linked to customer relationships and personalisation, the role of intermediary services like HERON may have to adapt.

Whilst recognising the efforts that HERON has put in to their service, some in the library community have expressed some reservations about the costs and performance of HERON, though it should be noted that these refer mainly to the early stages of the project:

- "It's expensive and hasn't delivered quickly enough although it has improved over the past 12 months"
- "We looked to incorporate HERON into MALIBU but the cost was prohibitive. It is interesting for specific user groups - those doing distance learning or needing specialist materials"
- "HERON will always be completely beholden to publishers - difficult to see any economic benefits. We've had our own internal e-reserve project for short loan journals for some time"
- "HERON seems to be taking a long time - it's not been a very productive experience and we're considering alternatives"

There is positive evidence of daily growth in the numbers taking out HERON subscriptions. Current price levels are, however seen as a limit on the extent to which HERON could scale up. The project is looking to the outcome of others' work on pricing to help break the deadlock. In particular the PELICAN project at Loughborough is being watched with interest across the sector. NetLibrary is also gaining momentum and the outcome of the Copyright Tribunal may have an impact on price issues.

The tendency for some institutions to go it alone could however present a significant threat to the project in the future if they can do it faster and/or cheaper. Amongst respondents covered in this evaluation, a number of institutions have, or are developing their own e-reserve initiative including LSE, Birmingham and Leeds. HERON's view is that those trying to set up their own e-reserve may not have fully costed the service and may not be taking into account some of the work involved around the process. It seems likely, however, that some HE libraries will continue to pursue their own e-reserve activities rather than depending on a single national service.

- "Some service may develop where they cream off the most profitable provision but someone has to cover the basic provision" - HERON Project Director
- "HERON is struggling but not through lack of effort. The situation would be chaos if institutions tried to go their own way" - SCONUL
- "LSE has developed its own pilot version of HERON - we're doing print course packs at the moment which are selling like hot cakes - although it took 3 years to build up - and we're now looking at electronic packs" - LSE

There is a tension between the need to run a service and the need to adhere to programme management routines. This is more difficult for an operational service to cope with as the "customer comes first". This means that "things like evaluation get done but in a different way". As an operational service HERON has had to cope with many of the problems encountered by small businesses, in particular staffing and cash flow.

How libraries will pay for services like HERON in the future will depend on how far budgets are restructured across the community. Currently many libraries have paid for the service through special project budgets however these are short term sources of funding and HERON needs to be able to sell its services through mainstream budgets. It is not clear how far libraries have started to reorganise their budgets to take account of new services like HERON although a respondent involved in library statistics has noted significant changes in recent years regarding library activities.

HERON has had a close relationship with Blackwells throughout the project and commercial players are seen as the key way forward for the service in the future. Managing the academic-commercial interface during the development phase of HERON has not always been easy, as emphasised by the comment that "The commercial and HE sectors are not easy bed fellows - we have different outlooks. There was a longer time lag needed as we worked through issues and constraints to ensure we had a shared understanding". An interesting comment is that it is not always obvious when commercial partners are having problems or encountering changes because they are naturally less open about operations. The changes in Blackwell's involvement led directly to having to drop plans for HEIs' own publishing on HERON.

Moving from development to a firm exit strategy has also raised important issues. The project suggested that "there is a danger of paralysis as we get more and more involved in the issues. No firm lead has been provided from JISC on the general issues of commercialisation (such as setting up protocols and models for basic licences for example). A shell company is proposed for a start-up commercial service but the partners are still involved in legal debate to ensure that the risks are minimised for institutions". Market circumstances have had an impact on potential investment from third parties. The crash of the dot-coms was perceived to have influenced the failure of one possible commercialisation prospect. Future business models will inevitably have an element of risk. "The Copyright Licensing Agency (CLA) agreements have been extended for the time being, but if HERON became a fully commercial service this would not be allowed and they would have to renegotiate. In the future HERON might be seen as competition to CLA, particularly if a commercial partner were involved."

Technical issues

The technical infrastructure of the HERON service may or may not be adopted once the service is commercialised. It is the wider technical issues which will have more impact on the future of the service. Library users of HERON are still trying to incorporate necessary routines associated with acquiring and delivering digital extracts into their mainstream activities. HERON has no control over the development of library infrastructures. Libraries (and HEI infrastructures in general) are still a long way from being able to recover costs from end users for HERON type services.

Although not technical in the ICT sense, the need to deal with complex legal issues has dominated the projects to services area, especially for HERON - eg. the time taken and costs to negotiate legal and service agreements with members, CLA and digitisation bureau.

Support to setting up new businesses is also an area where specialised support is needed for projects seeking self sustaining status.

Achievements

HERON (and its predecessor SCOPE) have played a significant role throughout eLib phases 1 to 3 in exploring the practical issues around electronic reserve services and, importantly, influencing the setting up of a number of e-reserve developments across the HE library community. Some comments made in this respect by librarians not involved in the project include:

- "HERON has given impetus for electronic reserve developments"
- "The On Demand Publishing work has had perhaps the most non-research impact of the eLib programme. HERON has continued this work ... and is valuable because it is nationally rather than institutionally based"
- "We've benefited from the various agreements set up by HERON - very valuable"

A good working relationship has been established with the CLA which has facilitated the re-negotiation of agreements at key points in the SCOPE and HERON projects. HERON is the only Trusted Repository designated by the CLA.

The Copyright Clearance Agency has informed the project that the bulk of HE clearances are coming via HERON. This demonstrates a high visibility and attainment of critical mass for the project at least amongst those institutions actively seeking clearance for materials. The growing number of HERON members (40+ HEIs) and growing usage levels demonstrate a willingness amongst HEIs to adopt the HERON route even if, in some cases, it is in parallel to in-house developments of their own.

The HERON system has adapted to provide a more personalised service to academic staff - "when we first started up the emphasis was on developing a resource bank and re-use issues. Now we're focusing on providing users with materials on demand rather than asking them to use pre-selected resources. The costs of digitisation are reducing to allow this".

The service offers several advantages over that provided by the CLA:

- It clears images incorporated in text
- It obtains permission from rightsholders outside the UK
- It can obtain permission for material published in electronic format
- It can negotiate with rightsholders where members' needs are not met by the CLA
- It will usually provide the finished product (digital file or printed course pack)

Creating critical mass of digitised material available for rapid use was seen to be a useful enhancement to the service but there was mixed success working with academic and public bodies to select suitable materials.

HERON is addressing one of the critical issues in library provision - improving access to recommended study materials. This is cited by many as the most important area for users – for example "if you do a survey of what users want, at the end of the day people want more copies of the most popular materials"

It is significant that the BUILDER hybrid library at Birmingham is using HERON as the basis for their e-reserve demonstrator.

HERON has raised the wider debate of "who pays" for learning and teaching support materials. There is still stiff resistance to charging students in many areas of HE and any future commercial e-reserve project will have to take this into account for revenue projections. In the meantime, HERON is constrained to demonstrating the practical possibilities of e-reserve under existing pricing models.

4.4.3.2 EPRESS

Objectives

The objective of EPRESS (Electronic Publishing Resource Service) was to establish a functional administration system for journal publishing. The project set out the following aims:

- To simplify electronic journal production by producing a series of highly automated on-line tools
- To pass on electronic publishing expertise and knowledge by building 'good practice' into the on-line tools and making documentation available
- To foster new electronic journals by providing facilities to encourage new titles.

These were intended to lead to more efficient electronic journal production, leading to lower costs which could then be passed on to the academic community at international level.

Assessment

EPRESS was proposed on the basis of experience gained from the electronic Journal Sociological Research On-line, which emerged from eLib Phase 1. The team working on the journal recognised that many of the tasks undertaken were essentially repetitive, and could readily be automated with suitable software tools. In this way, the cost base for electronic journal production, and possibly for hardcopy journal production, could be substantially reduced.

The project managed to develop a complete service by the end of its first year and to add facilities and functions during its operation in the second year. The tools can be demonstrated to prospective users via the EPRESS website.

The technical development of EPRESS appears to have been conducted effectively and the tools are effective in operational use for the Sociological Research On-line journal. The main issues for the project have been to capitalise on the significant external interest that has been shown in the product. Some of the issues which have arisen here are:

- The need for marketing, which would require additional staff to bring these skills to the project
- A lack of financial resources in many of the potential users
- The risk for potential users in adopting the system, given the need to migrate operational procedures to a new mechanism.

Potential investors were sought from within the publishing community, but these developments were not realised for the following reasons:

- The need for marketing and support input made the rate of return required high in relation to the capacity of the market to pay
- A key person in the project team took up employment in the commercial sector.

It was clear that a substantial step up would be needed to achieve a critical mass, and that the most likely way this would happen would be through a commercial, risk based approach. Realistically, this would be the only way to achieve the necessary scale.

As a result of the above issues, the external take up of the system was not as good as had been hoped. This in turn meant that the objective of fostering new electronic journals was not met, which was disappointing for the project, and frustrating given the benefits which have been realised with the in-house journals.

The project commented that they would have liked more contact with other projects. They were 'outsiders' in the sense that they were not librarians and many of the library issues were of little interest to them. It was interesting that the project had little interaction with CEDARS given that as an electronic journal, this was an issue for them. In fact, the team have taken a pragmatic approach to this problem by capitalising on standard security and back-up procedures for the server on which the journal is based. In the longer term (beyond 10 or 20 years), new procedures will be needed.

Technical issues

The main issues arising from the project are more related to marketing and sustainability than to technical matters. The proposed system itself was developed ahead of schedule and is operating effectively with the in-house journals.

Achievements

The project developed the tools it proposed and these have been put to use on the Sociological Research On-line. The benefits of the system in this context are clear. Since the eLib funding for the Journal ceased, it has been funded through institutional subscriptions. These subscriptions are not large and it is therefore essential for the operations to be achieved at low cost. The use of EPRESS has allowed this to be done, with most of the administration being covered by a part time post with limited technical skills. This in turn will allow for profitable operation as the subscriptions increase, and thus offers the opportunity for re-investment in the service offered. In effect, therefore, EPRESS has allowed an earlier eLib project to be sustained for the long term.

The project explored the possibilities of establishing a commercial product, but the level of scaling up required was not thought to be feasible. Nevertheless, the product remains effective and new electronic journal startups would be wise to consider using it.

4.4.4 Overall assessment for projects to services area

The projects funded in this area were medium risk. Arguably JISC funding should not be provided for low risk projects as these should be funded at institutional level. For HERON the market was well understood but they were up against significant barriers to achieving a sustainable level of income which were not under the direct control of the project, such as library infrastructures not geared to e-reserve and publishers' willingness to accept new pricing models.

eLib is developing new products and services in a relatively immature market - getting the "Early Adopters" or "Innovators" but these only represent a small proportion of the market place and as a result volumes of usage and number of clients are still low.

There are significant opportunities for products and services coming out of JISC programmes to expand their markets beyond HE into FE and the e-university to achieve additional revenue/wider benefits. This should be scoped in current JISC studies into the needs of FE for JISC-type services.

The HERON team has demonstrated an ability to take a customer-focused view. Activities have been service oriented and pragmatic planning has aimed to ensure that customer confidence is maintained. Customer awareness levels have been generally very high across eLib projects which makes the transition to services more feasible.

Lack of commercial experience may mean that projects underestimate the competition's (including other institutions) ability to overtake them in the HE library market, as new "me-too" providers come in with greater resources or creaming off the most profitable parts of the service.

In new markets there is usually only a small window of opportunity to gain critical mass, eLib projects started off ahead of the game but after 4 years, during which time development information is readily available to competitors via websites, it may be difficult to maintain commercial advantage.

JISC may need to explore the stage at which open, collaborative research and development work should be protected once a commercial prospect is identified. This is an area also faced by EU projects and the EU contact suggested that the "Biggest problem (for eLib and EU programmes) is to combat the gap between demonstrator projects and implementation in the wider community. Users take some time to "catch up" with new developments so projects needed transitional help. New service models are needed because existing ones are too commercially focused. It's not part of the library agenda to commercialise projects".

There is a need to clarify JISC's expectations in commercialising research results. JISC has had trouble achieving its objectives in this area, but it is notable that the conversion rate from EC research project outputs into products and services is not that high either, despite massive investment in dissemination and a dedicated Innovation Relay Centre support network for all Framework project participants. Nevertheless, there are models in place in EU funded programmes to support the transition to services/products - eg. Technology Implementation Plan - which may be useful for JISC to adopt or at least be aware of.

The difficulties in implementing exit strategies are certainly issues for project managers and directors as the following quotes confirm:

- "JISC keeps changing its mind about expectations in the projects to services area. Projects too tend to have unrealistic expectations about the resources available / needed (although HERON is an exception to that). I question the ability of any project to transform itself into a national service. If JISC is serious in this area it needs to have a unit to handhold academics through the process"
- "It's not in the interests of JISC or HEIs to talk about turning projects into services as if they mean it. Their core remit is education and research - they are not focused on investment in new services. There are very few universities who have successfully run services for the community. Forget about the emphasis on exit strategies".

If JISC wishes to provide support for the project to services area in the future, it may be appropriate to investigate the benefits to HE of working more closely with the enterprise support networks - Business Links, Scottish Enterprise, Regional Development Agencies - who are geared up to supporting new companies and new product development.

The ability of JISC to assess the commercial potential of JISC funded projects in the HE libraries area depends on getting information on future budgeting patterns as the statistics gathered in the past are no longer entirely relevant. This is an area where intermediary organisations such as SCOUNL and CURL/SCURL and UKOLN are likely to commission new market research. Access to other market research in the library market for JISC programme participants might be appropriate if JISC wishes to become more involved in

supporting new services. JISC may also benefit from closer links with the marketing and commercialisation expertise available through institutions' own business schools and Research and Commercialisation Offices.

By limiting follow on funding it is evident that JISC recognises that "only a few will fly". However the call for proposals framework may not be appropriate for selecting the most likely winners and ensuring that they get the level of support that they need to move to self sustaining status. The basis for funding decisions changes as projects/services get closer to market and JISC may need more explicit structures which reflect the shift in balance from funding to investment.

5 IMPACTS, BENEFITS AND VALUE

This section considers the more general impacts, benefits and value of the of eLib Phase 3. These are separated as far as possible from the impacts of the earlier Phases. The impacts of this type of programme are difficult to assess for the following reasons:

- Many are indirect and therefore difficult to attribute (such as incorporation of ideas into new software products or the transfer of skills as project personnel move to new jobs)
- Many are time lagged well beyond the end of the projects (and a number of Phase 3 projects are still operational)
- The background is changing rapidly and continuously (both in the immediate community and in the broader field of ICT)

In spite of these difficulties, it is still important to assess impacts where possible. The approach taken in this evaluation has been twofold:

- To trace through the work of the individual projects through their own institutional embedding and dissemination, taking account of their evaluations
- To interview librarians not directly involved in eLib for their views.

The process has also been assisted in Phase 3 because of the developing approach to evaluation by projects. In the final analysis, impact assessment remains a subjective subject which reflects the impressions of the authors based on discussions with those involved and those impacted, and a review of programme and project documentation.

5.1 General impacts

eLib Phases 1 and 2 provided a flagship for the library community which raised the profile of the profession and provided considerable impetus for new development, especially when linked to the building programme and NFF outcomes of the Follett Report. With this as a background, and with the emergence of the DNER on the horizon, eLib Phase 3 can appear as a relatively small programme sandwiched between the larger activities. This may partly account for the comment from one outsider that the programme appeared to be in a cul-de-sac.

On first impression, eLib Phase 3 can appear this way to an outsider. On closer inspection, however, the value of the work becomes increasingly apparent. This is because the projects have started to tackle many of the real issues and opportunities associated with the move towards effective use of ICT in libraries, greater interaction with related HE functions and a practical, service oriented approach. Indeed, many of the apparently negative features of eLib Phase 3, such as the often difficult relations with commercial suppliers and problems obtaining the cooperation of operational staff are signs that real issues were being addressed. eLib Phase 3 “got its hands dirty” while continuing to inform at a strategic level.

The value of the unifying theme of eLib should not be underestimated. The absence of such a theme in JTAP for example limited the impact of the programme as a whole. eLib Phase 3 may have had a lower profile in some respects, but it remains true to say that the programme whole remained greater than the sum of its parts. Given the profile that eLib has built up, it does seem surprising that the ‘brand’ has been dropped from subsequent activities, even if their emphasis is slightly different.

All Phase 3 projects have undertaken a significant amount of dissemination including publishing in key information and library journals, giving conference papers and producing

brochures and web sites. Often participation at key events was coordinated across the projects to save duplication of effort.

The accessibility of some of the more technical results may be an issue for eLib outsiders as the material can be impenetrable for non experts. Some more externally focused publications written in a more journalistic style could be advantageous in taking forward the final results.

The impacts of eLib Phase 3 start with impacts on libraries. Effects on the 'downstream' communities of academics and students are mainly achieved indirectly through the libraries, though with the advent of MLEs larger interfaces are developing. The impacts in these areas are examined in the following sections.

5.2 HE library impacts

Those contacted continued to regard eLib as having had an important impact overall in raising HE and non HE library awareness of the electronic library agenda. By having a clear strategy and the funds to back it, it is possible to make a much greater impact than ad hoc developments. Many of the impacts of the projects on libraries are covered under the project evaluations in Chapter 4. This section covers the more general library impacts.

Some of the continuing benefits of the national programme approach were highlighted by the SCONUL contact as follows:

- "The automation of catalogues has been going on for years but I can't think of anyone else who would have pushed it forward [other than eLib] . Everyone gets the benefits in the end when something is done through a national programme"
- "The sector has come to rely on eLib over time. Any misgivings about the early work have fallen away and people now realise the strategies involved"

An interesting example of the value of eLib was that SCONUL are often asked to make referrals for librarians seeking information on a particular topic. In a recently case, they referred a librarian who was seeking information about hybrid libraries and was not aware of eLib to the results of the Hybrids, and in this case to HYLIFE specifically. The person concerned was extremely positive about the value of the information found.

Library space & cost savings

Looking back to the original Follett report objectives, librarians confirm that it remains the case that the technology developments in libraries have not saved money any more than the paperless office has saved paper. Publishers remain instrumental in this issue and despite the efforts of activities such as Cogprints from eLib Phase 2, the costs and numbers of Journals are still increasing and the area is increasingly dominated by a smaller number of large companies. Ironically, the main money from Follett was for buildings and special collections. This has been a victim of its own success in that now the special collections have been catalogued and can thus be located, many more people want to access them.

One of the lessons of eLib as a whole therefore is that electronic media do not save money or library space and are not likely to in the near future. Part of the reason for this is that electronic library materials currently represent a parallel / overlapping activity and thus lead to greater costs. In addition, PCs take up more library space and e-Journals only cover about the last 3 years which means that the majority of material is still held in paper form. JSTOR helps in this, but emphasises the humanities which is one of the smaller areas.

Library cooperation

Most of the eLib Phase 3 projects promoted increased library cooperation. The Clumps projects in particular demonstrated this. The fact that the M25 and RIDING consortia decided to proceed with their Clumps work from internal funding illustrates that they have found value in the project outcomes. The work on interoperability at both library and system supplier level suggests that this cooperation may continue to yield important results.

As well as the links established within project groups, valuable links between projects were also established in Phase 3. This is a valuable development although it is difficult to say how far the effects reached beyond the eLib project groups.

Skills development

The further development of skills and knowledge was a major feature of the Phase 3 work. The projects were heavily dependent on technical skills for the development of the models and especially integration issues. These skills are particularly scarce in the HE sector (and beyond) and the projects did well to retain staff and make rapid developments from project start-up. In the longer term, however, providing suitable career structures for project staff remains an issue. One comment made in this regard was "we've had one member of staff who felt it was impossible to return to their previous job in mainstream operations after a spell on the project but cannot see any other career path ahead for someone with these additional skills".

The broad range of skills (and related organisational and management structures) needed for operating hybrid libraries were identified in a range of reports produced by the hybrid projects. These results complement the working models and will be a valuable planning resource for the community. Projects in the hybrid libraries area were notable for their successful convergence between ICT and library skills, the teams worked across traditional "demarcation" lines and benefited as a result.

Those involved in some projects have noted the lack of technical skills in some institutions (particularly smaller ones and those not involved in eLib) which could be a serious obstacle to the lessons of eLib being transformed into actual systems and services. Where skills have been developed, it is important to capture these for the sector where possible. Staff on contracts tend to leave after the project ends but it may not be possible to get them back again if more development were required. The fact that there is a hiatus in Hybrids work because they are not being continued per se in DNER emphasises this issue.

The issue of retaining staff within the 3 year funding cycle, identified in the Phase 1 and 2 evaluation therefore remains to be resolved and most interviewees have been unable to suggest any solutions to this perennial problem. A number of the project staff tend to gravitate towards centres for library research such as those at Bath and the South Bank.

Transferability

The work done in eLib Phase 3, particularly the non technical aspects, has a reasonable shelf life. JISC is aware of the need to ensure the accessibility of the knowledge, models, reports and tools to those outside eLib (as part of a general concern over the outputs of all JISC funded programmes).

Some views from outside the projects included:

- "BUILDER and HYLIFE informed our support for a distributed learning centre and our own electronic library UDEL"
- "colleagues felt that the hybrid libraries work was fine but there was not much progress yet in getting a generic system. They have been able to use the ideas generated by projects and adapt them for their own circumstances".

The evidence of enquiries to SCONUL from librarians who had not heard of eLib Hybrids work confirms that it is not possible to expect all librarians even in senior positions to be aware of the Hybrids work under eLib. Intermediaries in the library community can play an important role in reaching the eLib "outsiders". A searchable resource base of eLib outputs with suitable summaries and links to intermediary sites would help make use of project results before they are superseded or duplicated by new work.

5.3 HE community impacts

Programme emphasis

The Programme Director suggested that an implicit objective of Phase 3 was to address the needs of the undergraduate, perhaps working on a module, who had to "get into" a topic quickly and find sufficient sources to help them write their essay in a short period of time. The programme tried to get under the skin of this sort of user and aim to provide generic interfaces for the lowest common denominator, thereby improving accessibility generally.

This approach represents an attempt to help users to help themselves, and therefore represents a direct outreach to the user community. By doing this, the programme seeks the added benefit of relieving some of the pressure on library staff. Not all contacts thought that this approach had been realised. One comment made was that "eLib was supposed to be all about teaching but has been captured effectively by the research lobby. If you look at where all the money has gone it has been in looking at ways of making available research rather than supporting basic teaching services - yet researchers make little use of published materials in libraries - they are more interested in unpublished materials."

Evaluation and user expectations

Most eLib Phase 3 projects were involved in extensive evaluation which involved a wide range of users covering different types of institution, subjects, teaching staff, researchers, students (full and part time and distance learners). The approach to target audience research under eLib anticipated similar developments in the commercial information services sector and was carried out using various means - user groups, surveys, one to one observation - resulting in a considerable amount of user feedback. The information gained in this way allowed direct feedback into the projects to improve their targeting.

There were some problems for projects in managing user expectations - for example, HYLIFE uncovered difficulties in demonstrating what were research results rather than fully operational systems and this led to negative impressions once expectations has been raised. This was not an uncommon problem. Many of the projects were only approaching a full pilot system towards the end of their lifetime and therefore had limited time in which to engage the user community.

Academic involvement

All projects struggled to get academics involved although some departments were easier than others. There was a perceived reluctance amongst academics to spend time on experimental systems which were not guaranteed to develop into operational services.

In terms of links between Libraries / IS and academics, partnerships have been developed in some areas, but most academics still see them as service providers. In the electronic environment, however, library experience has become more important and this can be traced back to eLib. Some of the librarians contacted report that librarians in general have been given greater confidence to offer things proactively.

It has therefore remained difficult to get committed project involvement from academics. eLib project activity is not regarded as a priority and thus their involvement can be unreliable. This can be regarded as a 'rational' inertia because projects of this type are a big overhead on top of existing work.

In many respects, the findings here are unsurprising because most of the eLib projects act primarily on libraries and their effects on academics are therefore more diffuse. To take one example, the benefits of continuing to have the Sociological Research On-line journal available can be attributed to the administrative cost savings provided by the Phase 3 EPRESS project. This would not be visible to the wider user community as an eLib benefit.

User diversity

The problem faced in handling diversity as an issue for all the hybrid projects was neatly summed up by HEADLINE's "2 million libraries for 2 Million users" presentation title. If personalisation is taken to its logical conclusion, it commits to providing and maintaining individual "libraries" for all users in HE and FE. Projects did a lot of practical work on how to get the optimum level of granularity in information environments. The issues are less dependent on technology (which is developing rapidly in the wider community anyway in response to business needs for personalised services) than they are on user expectations and the resources available to provide the information users need. Managing expectations will be critical to this area in the future. eLib work on user searching behaviour has revealed illuminating evidence and challenged previously held assumptions.

As well as exploring end user issues, the hybrid work has provided a body of knowledge and "ammunition" to help senior library managers develop credible business cases for future library developments. The market demand revealed in Hybrids work has been stimulated from the supply side primarily - showing users some examples of what is possible and gauging interest/identifying problems. In a new market this is a valid approach as users do not necessarily appreciate what is possible and need to be "prompted" to some extent to re-think how they could use information resources. The findings that librarians are not always aware of how end users search may ring some alarm bells about libraries' assumptions of demand for hybrid services. The assumption that users need hybrid libraries has been tested in various ways by all projects. However the volume of the demand may need a reality check by independent market research.

There is still work to be done to bridge the gap to those outside the immediate eLib community. Some felt that eLib communicates to its direct peers quite well but fails to get to end users. Another comment was that "eLib is a closed community - when you mention it to those outside the eLib circle you can get blank looks - similarly for JISC". Nevertheless, there is evidence that eLib Phase 3 work has been important to other parts of HE. For example, the work on digital preservation is of great value to players such as the research councils both directly and through its contribution to the Digital Preservation Coalition.

Managed Learning Environments (MLEs)

Since about mid 1999 there has been a new emphasis on the MLE and student portals in the domains covered by eLib Phase 3. This includes access to learning material such as packaged course material and the hybrid library is only a part of this. This development goes beyond what was envisaged when the Phase 3 work was proposed and these are key developments. A major issue now is how the Phase 3 work and the hybrid libraries in particular, fit in with this. The view from one project was that "MLEs can help with the sea change needed with academic staff's approach to the hybrid library". The lessons from eLib hybrid libraries work for MLEs is the specific focus of the ANGEL project, funded by the DNER.

5.4 Publishers and rightsholder impacts

On the whole, Phase 3 had less direct contact with the publishers. The main areas of direct contact were through HERON and also in the area of digital preservation through CEDARS.

HERON has had to start to confront some of the issues associated with the development of electronic publishing. In particular, rightsholders' pressure for future costs to be more widely shared, which means students and departments having to pay is an issue HERON has had to consider. HERON has dealt with over 800 publishers and has published a list of publishers to allow librarians to analyse costs. Some of this is being fed forward into future programmes. One comment that the project made was that they have insufficient contact with the JISC / Publishers' Association Working Group.

CEDARS considered that they had only a limited influence on publishers although they may have increased awareness of the issues associated with digital preservation. This has been achieved through working groups which have involved publishers such as Cambridge University Press, Chadwick Healey and similar organisations. The work has also involved contact with trade organisations such as the Publishers' Association.

5.5 Commercial impacts

One of the issues addressed in Phase 3 was the transfer from projects to other institutions. One of the ways this was attempted was to embed the developments in commercial software so that it could be formed into products and sold back to other institutions. The problem here was that the most common platform used was FDI VDX. This emerged as a complex software suite which in the end even FDI did not regard as being well suited to the UK HE market, at least in libraries. As a result, some of the inputs from projects such as Agora and EDDIS have had more of an influence on US and Australian libraries through this route than they have had on the UK libraries.

More generally, there have been impacts on the commercial suppliers of Library Management Systems in getting them to support some of the functionality whose value has been highlighted by eLib projects. In particular, the work of the Clumps in promoting take up of the Bath Profile and associated changes needed to support their cross searching requirements has been valuable and promotes more general interoperability.

5.6 Public impacts

Some of the eLib phase 3 projects have tried to involve public libraries, but found it difficult because of a lack of the necessary local technical support during the development process. This applied to the Clumps projects in particular.

The public library sector is languishing due to lack of resources and is unlikely in the short term to be able to pick up on eLib results immediately even if they are interested in what is going on.

A range of organisations approached the HEADLINE Hybrid library project for further information on the PIE (Personalised Information Environment) including the Ministry of Defence, the Cabinet Office and the US Navy. HEADLINE has already provided input to the development of my.government and my.gov.uk, demonstrating potential benefits to the wider community beyond both HE and libraries. It has put a particular emphasis (and resources) into keeping track of developments in the wider field of e-commerce and portal services.

HYLIFE has been involved in discussions with SCONUL's advisory committee for medical/health libraries who have found the HYLIFE findings very interesting and helpful.

5.7 International perception and linkages

eLib remains highly regarded abroad. One contact reported a number of visits to Canada, US and Australia where contacts were very impressed with eLib although this suggested that they have a rosy view of the successes and do not seem aware of the less positive outcomes “these contacts tend not to be aware of the experimental nature of eLib and often think that the eLib projects are all in operational use”.

The involvement of the international community in the Bath Profile was a result of the earlier work done in eLib Phase 3 to enumerate the problem.

The sections covering the development of the FDI VDX product have noted that although it incorporates inputs from projects such as Agora, it sold well in the US and Australia while not being marketed in the UK.

5.8 DNER links

The DNER projects which originated in the JISC Circular 5/99 were in many respects an outgrowth of eLib. The eLib Programme Director had an important input to the drafting of the call. In harnessing the results of eLib, the DNER concentrated on the following areas:

- Collections strategy
- Service delivery
- Development strategy
- Communications strategy
- Preservation strategy

Some of the DNER projects with eLib roots are listed in Table 5-1.

Project	Description
ANGEL	<p>Authenticated Networked Guided Environment for Learning</p> <p>This project will research and design, produce software, implement, test and study-in-use a web-based Authenticated Networked Guided Environment for Learning with interfaces for all users (learners, teachers and administrators), integrating user access across hybrid library and directed learning information resources. (Links to Hybrids)</p>
DOCUSEND	<p>Docuend: integrating document delivery services</p> <p>Docuend will contribute to the DNER as an infrastructure service provider, by creating a one-stop document delivery service for handling journal article requests which is hospitable to being accessed via other portal and broker services. DOCUSEND is part of the JOIN-UP Programme. (linked to Lamda with FDI VDX)</p>
British Education Portal	<p>British Education Portal: the RDN subject portal for education.</p> <p>Led by the University of Leeds, this project will develop an education portal, to be aligned with the existing activity within the overall framework of the RDN.</p>
History online for learning and teaching	<p>History online for learning and teaching.</p> <p>Led by the Institute of Historical Research, this project will provide evaluated online resources for the learning and teaching of history within the DNER, and enhance the History Online resource for learning and teaching which will contribute to Humbul within the overall framework of the RDN.</p>

Project	Description
NMAP	<p>Nursing, midwifery and health professions gateway for the RDN. Led by the University of Nottingham.</p> <p>This project will extend the existing OMNI service to include nursing, midwifery and other professions related to medicine. An easily searchable catalogue of quality assured and evaluated internet resources, OMNI will incorporate a newly created, dedicated section for these professions.</p>
PELICAN	<p>Pricing Experiment Library Information Co-operative Network</p> <p>PELICAN will conduct desk research on the impact of JISC/PA (Publishers' Association) Pricing Reports, in order to discover the present level of activity in delivery of texts to students and to explore publisher, author and librarian attitudes to the issues raised by these developments and the eCLA Licence. The project will include a conference and reports, with recommendations for further research where required. (Linked to HERON)</p>
SAD I	<p>A subject -based approach to DNER: portal development 1, based with the RDN</p> <p>SAD I aims to develop three prototype subject portals based around existing RDN hub services. The first three subject areas to be covered will be Engineering, Medicine and Social Sciences, Business and Law. The software solutions developed in this project will feed into work being carried out in other projects.</p>
SAD I	<p>SAD II – A subject-based approach to the DNER: developing and managing RDN subject portals.</p> <p>SAD II takes forward a work programme to set up several Z39.50 subject-based portals. These will fuse content from distributed network services, weaving them into a customisable user experience. This activity will follow the experiences gained in the SAD I proposal which will develop prototype portals around existing RDN services: SOSIG (social sciences), EEVL (engineering) and OMNI (medicine). SAD II will be taken forward by the Resource Discovery Network and will provide a framework within which other RDN portals or 'fusion services' will be managed.</p>

Table 5-1: Summary of key DNER projects with links to eLib Phase 3

In addition to the individual projects listed in Table 5-1, it should also be noted that UKOLN are currently developing a generic technical architecture for the DNER. This activity draws on work undertaken in eLib, particularly in the MODELS supporting studies, hybrid libraries and the RDN.

In setting up the 5/99 call, there were a number of 'hooks' to provide for the development of eLib areas. On the whole, the response to these was not as good as had been hoped. Only one recognisable hybrid library proposal was accepted with roots in Phase 3, this was ANGEL, which built on the work of HEADLINE with an emphasis on authentication.

Although hybrid projects have had limited feed through into DNER, the DNER itself has been described as 'the hybrid library writ large' - a national scale information environment. The areas explored in the hybrid libraries work at local level are therefore the same issues which the DNER will address. These include a synthesis of previous developments in managed information environments, increased research into user needs, targeted information landscapes, provision of services within a coherent system and the need to engage with learning and teaching.

The lessons learned from the hybrid libraries are being passed on to the DNER in summative form through reports such as "Beyond eLib: Lessons from Phase 3 of the Electronic Libraries Programme" by Stephen Pinfield in collaboration with the eLib Phase 3 project managers. This report will recommend that a Hybrid Library Focus be established to continue the work done under eLib, operating at the interface between the DNER and institutions, possibly working up a formal specification for the hybrid library and exploring further the relationship

between HL and the institutional OPAC. As with the other parts of eLib, the challenge is to hold onto valuable knowledge gained through eLib and ensure that it can be accessible to others working in similar or complementary area.

In a recent article by Stephen Pinfield and Lorcan Dempsey ("The DNER and the Hybrid Library" - Ariadne issue 26) the authors acknowledged that the eLib Phase 3 hybrid library projects "have important lessons to offer in the technical review of the DNER" through their investigations into authentication and middleware, presentation issues, fusion technologies, content creation and personalisation.

As a service enabler, the DNER will be in a position to support the future development of hybrid libraries at local level by taking up those services and functions which can most effectively be provided centrally whilst allowing local institutions to develop systems appropriate to their own users and particular infrastructures.

In terms of the Clumps, these are viewed as having been a useful experience. The DNER activity in this area intends to draw these activities together by linking policy, services and technology. There are three projects with high profile use of Z39.50 which can take forward the findings of the Clumps projects.

5.9 Value and economic benefits

eLib Phase 3 continued to demonstrate the value of a nationally managed programme, though in a slightly different way to its predecessors. With the more pragmatic approach favoured by Phase 3, the Programme was more open to the challenge that individual institutions could have done the work themselves. Indeed, some of the organisations contacted that are not involved in eLib did suggest this. Nevertheless, the value of eLib Phase 3 in this respect can be seen in the following:

- It provided flagship projects to act as exemplars for the community
- It allowed different approaches to key problems to be tested in a coherent manner
- It was able to test approaches, such as the use of Z39.50 for virtual union catalogues, over wide communities
- Self sustaining projects were achieved, offering benefits to substantial proportion of UK HE
- It has helped moves to unify some of the requirements, which will in future allow more cost effective systems to enter the market
- eLib Phase 3 continued to engage widely, extending the already coverage achieved in Phases 1 and 2 considerably
- The community developed considerable practical skills from its work on Phase 3
- Dissemination allowed the findings of the work to be shared widely among the community
- eLib has been a cost effective training exercise and has created more informed purchasers

6 STRATEGIC OBSERVATIONS

The achievements and impacts of eLib have important implications for JISC strategy. This chapter considers the contributions of eLib Phase 3 to these strategies.

The JISC five year strategy (1996 to 2001) presents the objectives for the eLib Programme³. These objectives were framed at a time when the majority of Phase 1 and 2 projects were in progress and therefore represented strategic objectives as eLib was entering Phase 3. A new strategy is now in the final stages of development for the period 2001 to 2006. The following section examine the contributions of eLib Phase 3 to the 1996 to 2001 strategy and make observations on how it has informed JISC as it moves into a new period.

6.1 Publishing

- *To promote change in the publication of journals and in the STM chain through encouraging new methods of formal and informal networked scholarly publishing*
- *To encourage better understanding by commercial publishers of the needs of the HE sector*
- *To develop the distributed national electronic collection and to ease access to networked information resources*

The primary contribution of Phase 3 in this area is in the work on improving access to network resources in support of the DNER. The Clumps work has developed regional clusters within which resource discover has been made easier for users. As a result, the organisations involved in many cases have provided their own continuation funding. This provides for more effective sharing and use of resources. The other two areas have been addressed to some extent by EPRESS in the first case which has provided a basis for easing the journal production process and HERON and CEDARS which have pressed the HE views in the areas of on-demand publishing and digital preservation.

6.2 Delivery

- *To promote change in document delivery systems to enable learning materials to be distributed on a collaborative basis amongst universities*
- *To contribute, primarily through initiatives for document delivery and copyright, to lightening the burden on university libraries caused by the purchase of periodicals*
- *To make an impact on the delivery of information to staff and students in higher education by the exploitation of IT*

The impact of eLib Phase 3 on document delivery has been limited, although HERON has had an important effect of the process of obtaining copyright clearance for on-demand publishing sources. The EDDIS extension would have helped to advance this area by developing the capabilities of the FDI VDX product to encompass this area. This projects did not realise its objectives, however. The hybrid libraries and clumps both had the potential to converge on document delivery, but did not progress to this stage.

It is notable that there have been indirect impacts on document delivery in that some of the work on Agora has been used to develop VDX in a way which has assisted the DOCUSEND project being conducted under the DNER. This project operates in support of the Lamda

³ JISC Five Year Strategy, July 1996 (Appendix D Committee on Electronic Information (CEI) - Objectives for the eLib Programme) NB - the sectional breakdown has been added for the purposes of this report and was not originally present.

consortium which provides document delivery functions and which originates in eLib Phase 1. It should be noted that some of the activities in this area could be seen as a victim of their own success in that the BLDSO has changed its pricing policies in favour of HE ILL users.

6.3 Cultural change

- *To obtain measurable change in the skills, culture and understanding of the use of IT amongst library staff, information workers and library users*
- *To explore different models of the position of the scholarly community in the ownership of electronic copyright through practical experimentation and through dialogue with other interested parties*

There has been a substantial impact on staff skills through eLib Phase 3, though there remains a problem in transferring some of this learning to the operational staff. Operational staff are often heavily loaded and therefore find it difficult to find time to develop the new skills. There appears to be a gradual change occurring which is typical of greater use of ICT in that fewer staff are required, but those that are required need a greater range of skills. Many of these skills are linked to the ever more complex copyright issues which arise when dealing with electronic materials.

6.4 Management and dissemination

- *To identify, promote and fund projects, all with specified milestones and deliverables, so as to make a significant contribution to the development of the electronic library*
- *To monitor all projects continuously against their agreed deliverables, and against other wider developments*
- *To produce regular reports on the progress of the Programme; to promote and publicise the activities of the eLib Programme and projects; to evaluate the overall impact of the eLib Programme*

The management of eLib has involved more demanding situations than Phases 1 and 2, although there were fewer projects to handle. Some of these have emerged from a strategic decision to route projects to users through commercial suppliers. There is a consensus that the problems were effectively managed and that procedures have been evolved as a result.

6.5 New areas from the 2001 to 2006 strategy

Table 6-1 summarises the inputs from eLib Phase 3 which inform different areas of the JISC strategy for the period 2001 to 2006.

New JISC strategy area	eLib Phase 3 input
<i>Build an on-line information environment providing secure and convenient access to a comprehensive collection of scholarly and educational material.</i>	Hybrid libraries contribute to handling a wider range of material Clumps addressed issues of access, particularly to less mainstream items Digital preservation work also contributed to issues of access
<i>Help institutions create and maintain managed learning environments to support students.</i>	Hybrid libraries covered important issues such as authentication and the library interface to these broader information environments
<i>Promote innovation in the use of ICT to benefit learning and teaching, research and the management of institutions</i>	Hybrid libraries increasing the range of materials available HERON contributes to the availability of copyright cleared electronic material

New JISC strategy area	eLib Phase 3 input
	EPRESS contributions to efficiency of journal production
<i>Improve staff and student skills in the exploitation of ICT, particularly in their use of the Internet</i>	Hybrid library modules were tested by staff and students and most included induction / training modules Clumps projects sought to open up searching facilities for users.
<i>Support the regional and community agenda of institutions through the Metropolitan Area Networks and Regional Support Centres</i>	The links developed through the Clumps work have cemented regional groupings, which operate effectively together.
<i>Provide a focus for collaboration between UK educational IT initiatives to help create a wider information literate society</i>	eLib Phase 3 has operated effectively with related activities. It has naturally been closest to other JISC and HEFC programmes, but many of the outputs are relevant to broader initiatives in educational applications of ICT.
<i>Promote and facilitate international collaboration in the exploitation of ICT</i>	Some of the eLib projects have fed into international collaborative programmes. For example, CAMELION has picked up on some of the CEDARS issues.

Table 6-1: Summary of eLib Phase 3 inputs to JISC strategy 2001 to 2006

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

The conclusions in this section are expressed in terms of answers to the four key questions for the evaluation set out in Section 1.4.

Did the Programme supply sufficient added value to justify the allocation of JISC resources - did eLib Phase 3 provide benefits which would not have happened otherwise ?

- 1 eLib Phase 3 was a successful programme which has met most of its objectives and has had significant impacts for a programme of its size.
2. The allocation of JISC resources has been justified because eLib Phase 3 has applied emerging technologies to key operational issues in the HE library sector and thereby provided models and lessons which will inform future development. These findings have benefited the whole community through the extensive dissemination and evaluation procedures applied.
3. The emphasis in Phase 3 was more practical and service oriented than the earlier Phases and as a result the outcomes are of a more technical and detailed nature. These outcomes, despite a lower profile, are no less important or influential and would not have happened in this coherent form without the Programme.
4. Most of the Phase 3 outputs are in the form of pilot systems and greater understanding, in line with the programme objectives. Some projects did however start with implicit objectives to produce operational systems which were not realised within the project lifetimes.
5. Looking back to the original Follett objectives, there is still limited evidence of cost savings emerging from the work of eLib. Much of the work emphasised increased functionality, although some of the activities should lead to greater direct user empowerment which may produce overall efficiency gains. Phase 3 work in the area of electronic journal production, though small in scale, did produce measurable cost savings.

Did the adoption of a national, managed programme provide benefits compared to a more fragmented distribution of the funds to HEIs to pursue their own ends - was the right approach adopted ?

- 6 There were clear benefits in taking a coordinated approach to each of the main areas of eLib Phase 3. The benefits arise from the structured range of different approaches covered by the different projects. Emphases in hybrid library projects ranged from technical to organisational while Clumps covered both regional and subject based approaches. This provided a more comprehensive and informative output than a fragmented approach.
7. eLib Phase 3 extended the number of HEIs involved in the programme, building on the already large number involved through Phases 1 and 2. The Clumps projects accounted for a large proportion of the new players involved.
8. The projects have all been very active in both user consultation and dissemination to ensure that the results are shared with the wider community.
9. Some of the eLib Phase 3 projects have become self sustaining with funding provided by the institutions themselves.

Given the structure which was adopted for eLib, was the Programme conducted effectively within this framework ?

- 10 The management of the Programme remained efficient and effective. High levels of project cooperation were also a positive development. Changes in the staffing of the Programme Office towards the end of Phase 3 may have been difficult to avoid but did cause a loss of continuity and a reduction in the time available for project support. These problems did not ultimately compromise the quality of the Programme.
11. A positive feature of the formative evaluation work was that it helped projects to embrace high levels of user consultation. There remains a very tight time window for evaluation of working prototypes between the availability of a trial version of a system and the specification of the final deliverables.
12. The relationships between a number of projects and their commercial partners have been difficult at times during the course of the work. Despite this, a satisfactory conclusion has been reached in most, though not all such cases.
13. The model of using a commercial supplier as a means to distribute the outcomes of the projects to a wider user base has been explored in Phase 3 with mixed results. It is ironic that most of the successes of the resulting product have been outside the UK HE sector. There is a suggestion that the UK HE sector is not yet a suitable market for more complex products because of the dominance of BLDSC ILL service, the non homogeneity of UK HE libraries and the lower profiles of library consortia in the UK.

What has the impact been on the different stakeholder communities ?

14. eLib Phase 3 has had an important impact on HE libraries by accelerating the uptake of new technologies in a practical, user service oriented way. It has broadened horizons by exploring a range of approaches. By supporting the continuation of work in on-demand publishing and e-journal production, Phase 3 has also impacted broader communities.
- 15 The hybrid libraries have established working models, addressing both the technical and institutional issues associated with the increased provision of electronic services by HE libraries. A wide range of approaches have been explored to allow organisations to tailor the findings to their own needs. Developments have been both conceptual, such as information landscapes, and practical such as authentication and personalisation. The hybrid libraries have also provided valuable input to the broader Managed Learning Environments which are now emerging. There has been considerable interest in this work from organisations outside the HE sector.
16. Some of the eLib Phase 3 projects have become self sustaining with funding provided by the host institutions themselves. The Clumps projects have been prominent in this, having built on pre-existing consortium arrangements. It is clear that the management in these organisations find the emerging services useful and are willing to support them as a result. The fact that these projects include a substantial proportion of UK HEIs is also important.
17. The work undertaken on digital preservation is important and has succeeded in raising the profile of the issue from an HE perspective at a high level. The project met its objectives in most areas. The issues of costs were handled at a conceptual level. More work is needed on costs and access.
18. Many institutions would like to develop their infrastructure and services further, to take account of the eLib findings and models, but are unable to fund these developments while maintaining an acceptable level of operational service.

Table 7-1 summarises some of the key achievements in the different programme areas of eLib Phase 3.

Programme area	No. projects	Total budget	Achievements
Hybrid libraries	5	£2,188,147	<ul style="list-style-type: none"> • Contributed significantly to knowledge of how hybrid libraries work in practice and their impact on various communities • Working models established by all 5 projects with positive evaluation. Wide range of content and functionality covered. • Enough diversity to allow the community to compare and contrast approaches • Clear evidence of institutional embedding • Some functionality built into commercial products • Influence on the design of the DNER • Forward links to MLE activities
Large scale resource discovery (Clumps)	4	£977,863	<ul style="list-style-type: none"> • Four working Clumps established • Made valuable progress on technical Z39.50 issues • Important work on organisational aspects such as collection level descriptions and access policies • Directly developed library cooperation • Evidence of effective exit strategies in that 2 major Clumps which represent a substantial fraction of UK HE have continued their work with self funding.
Digital Preservation	1	£370,000	<ul style="list-style-type: none"> • Tackled an important and difficult area of work • Made recommendations in the areas addressed • Provided a framework in the key area of cost models • Provided HE input to the broader debate on legal deposit of electronic materials • High profile project with a high level of external interest
Project continuations	2	£586,000	<ul style="list-style-type: none"> • Maintains the development of the On-demand publishing work • Substantial number of HE copyright clearances are now coming via HERON • HERON is addressing one of the critical issues in library provision - improving access to recommended study materials. • EPRESS has succeeded in developing a framework for the production of electronic journals.

Table 7-1: Summary of achievements in programme areas

7.2 Recommendations

In making recommendations from the experience of eLib Phase 3, it is recognised that new JISC programmes such as the DNER and MLEs have started which pick up a number of the lessons from the programme.

Branding issues

- R.1 The value of the eLib 'brand' was established by Phases 1 and 2 and confirmed by eLib Phase 3. It is recommended that **the importance of such branding issues should be reviewed for future programmes** to ensure that the benefits of a 'flagship' are retained.

Programme management

- R2a It is recommended that the **responsibilities and authorities of the different parties involved in project management should be clearly stated in future programmes**. In particular, the relative authorities of the project boards and the Programme Office should be clear.
- R2b Newcomers to JISC projects tended to take longer to start their projects because they were unaware of the 'tricks of the trade' normally used to speed up initiation. **It is recommended for future calls that support should be provided to 'novices' to ensure that project start up can be as swift as possible.**

Commercial supplier involvement

- R.3a It is recommended that **JISC review the status and likely development of the UK market for potential products which may emerge from its programmes**. This would inform decisions about the nature and level of involvement of commercial systems suppliers. The review should attempt to identify the level of product complexity and pricing that the UK market can support.
- R.3b It is recommended that JISC seek to **encourage more than one supplier to become involved in programmes of this type** to ensure competition and prevent single points of failure. This may require a step back from the cutting edge in some cases.
- R.3c It is recommended that **JISC and commercial suppliers agree a clear specification** of mutual commitments in projects of this type. This should include a statement of JISC specific requirements for the projects. Clear mechanisms for contract changes should also be specified.
- R.3d It is recommended that **contracts for the involvement of commercial suppliers should be put in place at or near the start of the work**. Decisions made on individual contracts should not be dependent on decisions made on parallel projects.

Consortia

- R.4a The value of 'natural' or pre-existing consortia has been clearly evident in this evaluation. It is recommended that **existing groupings should be sought in future when self sustaining outcomes are sought**.
- R.4b It is recommended that **consortia be encouraged to enlist the support of those likely to carry out project tasks at the proposal and planning stage**. If such people are required to carry out tasks in addition to **their normal operational tasks, these should be costed into the proposal**.

Hybrid libraries

- R.5 Much valuable information has been obtained from these projects. Some feel that they have nevertheless ended in a cul-de-sac. To ensure that this is not the case, **steps should be taken by JISC to ensure that the lessons from these activities are not lost.**

Clumps

- R.6 The Clumps have made good progress towards pragmatic systems which satisfy their users within the current limitations of the Z39.50 protocol. It is recommended that **the efforts towards cooperation and convergence within the regional and subject consortia be pursued**, taking account of the non technical developments of these projects.

Preservation

- R.7 It is noted that work in this area has already been continued. It is recommended that **the on-going work should include issues of cost models and access.**

Institutional and user take-up

- R.8a There have been **interesting findings from the Hybrids and Clumps about the nature of user behaviour** in relation to searching and use of these systems. It is recommended that **these findings should be explored further** because they have important consequences for future programme decisions.
- R.8b This evaluation has identified a number of factors which limit institutional and user take-up. These include slower development of back office systems, a lack of IT staff with the necessary specialist skills and a lack of operational resources. **It is recommended that JISC take full account of such factors when setting future objectives.**
- R.8c Many of the projects have found that authentication was a larger issue than expected. Effective authentication is the key to delivery of personalised services and in some cases represents a barrier to local uptake because of the complexity involved. The DNER has picked up this topic and commercial developments are continuing so **it is recommended that JISC continue to monitor developments in this area** to guide those seeking to implement local systems.

Exit strategies

- R.9a This evaluation has perceived that some projects considered that their exit strategies were not realistic and were formulated because they had to have them in place. This view may be the result of hindsight, but it is nevertheless important for projects to set realistic targets. It is therefore recommended that **JISC provides a lead to projects on its expectations for their individual exit strategies and the means that should be used to achieve them.**
- R.9b Where required by exit strategies, **it is recommended that JISC provide support to projects on appropriate models, protocols and basic licences and support in their implementation.** The basis for funding decisions changes as projects/services get closer to market and JISC may need more explicit structures which reflect the shift in balance from funding to investment.
- R.9c It is recommended that JISC **explore the process through which open, collaborative research and development work should become protected once a commercial prospect is identified.** New service models are needed because existing ones are too commercially focused in some cases.

- R.9d It is recommended that if **it is intended to bring the results of an activity to the market, sufficient resources should be allocated to support effective marketing**. This is particularly important where project outputs are not made freely available and depend on commercial mechanisms to achieve widespread use. It may be appropriate to investigate the benefits to HE of working more closely with the enterprise support networks who are geared up to supporting new companies and new product development.

Reporting

- R.10 It is recommended that the **project reporting should be streamlined where possible and should concentrate on key issues of concern**. The aim is to improve the ability of the small central management team to use the information effectively and to limit the overhead on projects.

Dissemination

- R.11a There are significant opportunities for products and services emerging from eLib to expand their markets beyond HE into FE and the e-university to achieve additional revenue/wider benefits. It is recommended that **current JCEI studies should be scoped to consider the needs of FE for JISC type services**.
- R.11b Individual projects have undertaken extensive dissemination during the course of eLib. In some cases, a more centralised approach to dissemination could have optimised the use of resources. **It is recommended that the balance between central and project level dissemination be reviewed for future programmes**.
- R.11c It is recommended that **a single authoritative summary of eLib should be produced**. This could take the form of a book designed to **summarise the end results, particularly those of practical value to librarians** and should be produced in an approachable 'journalistic' style. The summary should take account of the DNER work to summarise Phase 3 lessons and be disseminated actively. It should be linked to an end of Programme dissemination plan established in cooperation with library groups.
- R.11d eLib has produced an extensive resource base of information which remains of value to the library community. Much of this information is held at project level, which requires outsiders to know about the programme to access it effectively. **It is recommended that JISC investigate the use of knowledge management techniques to broaden access to the information resource**. This would complement the previous recommendation and could form part of a larger JISC information resource.

Programme links

- R.12 There are important links between eLib and its parallel and successor programmes. In some cases these could have been stronger, particularly across committees. It is recommended **that JISC should monitor the ongoing opportunities for programme cooperation**, particularly with the complex linkages needed within the DNER and MLE activities.

APPENDIX A: Evaluation interviews

The following interviews were conducted to provide input to the evaluation.

Type	Programme / Project Links	Contact / Position	Organisation
eLib	Programme Office	Chris Rusbridge, Programme Director	Now Glasgow University
DNER	DNER	Lorcan Dempsey, Director	DNER, King's College, London
eLib	Programme Office / DNER	Stephen Pinfield,	University of Nottingham
Hybrids	MALIBU	Astrid Wissenburg, Project Coordinator	King's College, London
	HYLIFE	Ian Winkworth Project Co-Director	University of Northumbria, Newcastle
	HYLIFE	Peter Brophy Co-Project Director	CERLIM / Manchester Metropolitan University
	Agora	Greg Newton-Ingham, Project Manager	University of East Anglia
	HEADLINE	Maureen Wade, Project Director	BLPES, London School of Economics
	HEADLINE	John Paschoud, Project Manager	BLPES, London School of Economics
	BUILDER	Michele Shoebridge, Project Director	University of Birmingham
LSRD (Clumps)	RIDING	Peter Stubley Project Director	St. George's Library, University of Sheffield
	CAIRNS	Mark Denham, CAIRNS Project Co-Director	Head of IT Services Glasgow University Library
	M25 LINK	Jean Sykes, Project Director Deputy Director IRS / SCONUL Chair	BLPES, London School of Economics
	M25 LINK	John Gilby Project Manager,	BLPES, London School of Economics
	Music Libraries on- line	Kate Sloss Project Director	BLPES, London School of Economics
	Music Libraries on- line	Marion Hogg Project Manager	Trinity College of Music
Digital preservation	CEDARS	Kelly Russell	Leeds University
Continuations	HERON	Carolyn Rawlinson Project Director	University of Stirling
	HERON	Sally Curry Project Manager	University of Stirling
	EPRESS	Professor Nigel Gilbert, Pro Vice Chancellor and Project Director	University of Surrey
Commercial supplier	Agora, RIDING, MLO, BUILDER	Neil Smith, Project Manager	Fretwell Downing Informatics

Table A-1: Programme interviews

Contact	Organisation	Position
Toby Bainton,	SCONUL	Secretary
Paul Miller	UKOLN	Interoperability Focus
John MacColl,	Science and Engineering Learning and Information Centre (SELIC), University of Edinburgh Edinburgh	Director
Andrew Green	National Library of Wales, Aberystwyth	Librarian
David Potter	University of Derby	Deputy Librarian
Hugh Wellesley-Smith	University of Leeds	Deputy Librarian
Richard Heseltine,	University of Hull	Director of Academic Services / Librarian
Ronald Milne,	Research Libraries Support Programme (RSLP), Edinburgh	Programme Director
Chris Batt,	Re:Source	Director of Learning and Information Society Team
Pat Manson,	EU DG XIII	Information Society, Unit D2, Principal Administrator

Table A-2: Non programme interviews

APPENDIX B: Partnership involvement in eLib Phase 1, 2 and 3

The two tables in this section list the organisations involved in eLib. The first table shows HEIs and the second lists other organisations. Lead roles and partnership roles in eLib are shown separately, with Phase 3 projects shown in bold type. Organisations not linked to any specific projects are shown as having had 'no major involvement', which acknowledges that they may have had less formal links to the programme.

The list has been compiled to illustrate the scale of participation in eLib and it is acknowledged that there may be some smaller partnerships which have not been included. For ease of sorting and finding institutions, University names have been modified so that the term 'University' appears at the end. Apologies to those affected.

HEI	Lead Roles	Partnerships
Aberdeen University		CAIRNS
Aberdeen University		DigiMap
Aberdeen University		SCOPE
Abertay, Dundee		CAIRNS
Abertay, Dundee	Ariadne	
Abertay, Dundee		EduLib
Abertay, Dundee		SCOPE
Aberystwyth University		NewsAgent
Anglia Polytechnic University	No major involvement	
Anglia University		EOn
Aston University		ERIMS
Aston University		TAPin
Bath (UKOLN)		Agora
Bath (UKOLN)	MODELS	
Bath (UKOLN)		Ariadne
Bath (UKOLN)		NewsAgent
Bath (UKOLN)		ROADS
Bath University	InfoBike	
Bath University		ROADS
Bath University		EDDIS
Bath University		InfoBike
Birkbeck College		ADAM
Birmingham Conservatoire		Music Libraries Online
Birmingham University	BUILDER	
Birmingham University		Internet Library of Early Journals
Birmingham University		SuperJournal
Birmingham University		TAPin
Bishop Grosseteste College, Lincoln		Eurotext
Bournemouth University	No major involvement	
Bradford University		RIDING
Bradford University		SuperJournal
Bretton Hall (Leeds)		DIAD
Brighton University	No major involvement	
Bristol (ILRT)	BizEd	
Bristol (ILRT)	ROADS	
Bristol (ILRT)	SOSIG	
Bristol (ILRT)		MIDRIB
Bristol University	No major involvement	
Brunel University	No major involvement	

HEI	Lead Roles	Partnerships
Buckingham University	No major involvement	
Butterworth-Heinemann		ERIMS
CAB International		eSPeRe
CAB International		SuperJournal
CALIM		InfoBike
Cambridge University	CEDARS	
Cambridge University		CLIC
Cambridge University		EEVL
Cambridge University		OMNI
Cambridge University		SuperJournal
Cambridge University Press		EDDIS
Cambridge University Press		SuperJournal
Cardiff University		FORMATIONS
Central England University	TAPin	
Central Lancashire University		HYLIFE
City University		M25 Link
Council for British Archaeology		Internet Archaeology
Courtauld Institute of Art, London	No major involvement	
Coventry University		ADAM
Coventry University		TAPin
Cranfield University	No major involvement	
DeMontfort University	ERCOMS	
DeMontfort University	HELIX	
DeMontfort University		Phoenix
DeMontfort University		SuperJournal
Derby University	No major involvement	
Dundee University		CAIRNS
Durham University		Internet Archaeology
Durham University		SuperJournal
East Anglia University	Agora	
East Anglia University	EDDIS	
East London University	eOn	
Eastman Dental Institute London	No major involvement	
Edinburgh University		CAIRNS
Edinburgh University	DigiMap	
Edinburgh University		EEVL
Edinburgh University		SCOPE
Essex University	No major involvement	
Exeter University	No major involvement	
Falmouth College of Arts		DIAD
Glamorgan University	No major involvement	
Glasgow Caledonian University		CAIRNS
Glasgow Caledonian University		SCOPE
Glasgow School of Art		ADAM
Glasgow University	CAIRNS	
Glasgow University		Internet Archaeology
Goldsmiths College London	No major involvement	
Greenwich University		M25 Link
Griffith University, Brisbane	JEDDS	
Guildhall School of Music and Drama		Music Libraries Online
Guildhall, London	DeLiberations on TLHE	
Heriot Watt University		CAIRNS

HEI	Lead Roles	Partnerships
Heriot Watt University	EEVL	
Heriot Watt University		SCOPE
Hertfordshire University		HEADLINE
Hertfordshire University	HEDC	
Hertfordshire University	RUDI	
Heythrop College London	No major involvement	
Highlands and Islands University		HYLIFE
Huddersfield University		RIDING
Huddersfield University		Phoenix
Hull University		RIDING
Hull University	EduLib	
Hull University	Eurotext	
Humberside University		Eurotext
ICBL		EEVL
Imperial College, London	CLIC	
Imperial College, London	eStacks	
Imperial College, London		EEVL
Institute of Child Health, London	No major involvement	
Institute of Education London	No major involvement	
Institute of Electrical Engineers		EEVL
Institute of Electrical Engineers		SuperJournal
Institute of Historical Research, London	Electronic Seminars in History	
Institute of Historical Research, London	ER in History	
Institute of Historical Research, London	IHR-Info	
Institute of Neurology , London	No major involvement	
Institute of Psychiatry London	No major involvement	
John Moores, Liverpool	QUIPS	
John Moores, Liverpool	ODP - Humanities	
John Wiley and Sons Ltd		Open Journal Framework
John Wiley and Sons Ltd		SuperJournal
Keele University		InfoBike
Kent University		InfoBike
King Edward's Hospital Fund		OMNI
King's College, London	MALIBU	
King's College, London	CINE	
King's College, London		LAMDA
Kingston University		DeLiberations on TLHE
Lancaster University		EDDIS
Leeds College of Music		Music Libraries Online
Leeds Metropolitan University		RIDING
Leeds University	CEDARS	
Leeds University		RIDING
Leeds University	EducationOn-line	
Leeds University	Internet Library of Early Journals	
Leeds University		CLIC
Leeds University		LAMDA
Leeds University		SuperJournal
Leicester University		ACORN
Leicester University		FIDDO

HEI	Lead Roles	Partnerships
Lincolnshire and Humberside University		RIDING
Linen Hall Library		CAIN
Liverpool Hope University		QUIPS
Liverpool Institute of Higher Education		ODP - Humanities
Liverpool University		QUIPS
London Business School		HEADLINE
London Charing Cross & Westminster Medical School	No major involvement	
London Colleges, Schools, Institutes and Teaching Hospitals	No major involvement	
London Institute (College of Printing)	DIAD	
London Institute of Cancer Research	No major involvement	
London School of Economics (BLPES)	HEADLINE	
London School of Economics (BLPES)	M25 Link	
London School of Economics (BLPES)		LAMDA
London School of Economics (BLPES)		SuperJournal
Loughborough University	ACORN	
Loughborough University	FIDDO	
Loughborough University		ROADS
Loughborough University (HUSAT)		SuperJournal
Luton University	No major involvement	
Manchester Business School		LAMDA
Manchester Metropolitan (CERLIM)	HYLIFE	
Manchester Metropolitan (CERLIM)		Agora
Manchester Metropolitan (CERLIM)		NewsAgent
Manchester Metropolitan University	LAMDA	
Manchester University		eStacks
Manchester University		Internet Library of Early Journals
Manchester University		LAMDA
Manchester University		SuperJournal
Manchester University (Computing)		WoPEc
Middlesex University		M25 Link
Middlesex University		ADAM
Multimedia Research Group		Open Journal Framework
Napier University		CAIRNS
Napier University		HERON
Napier University		CATRIONA II
Napier University		SCOPE
National Art Library		ADAM
National Institute for Medical Research	OMNI	
National Institute for Medical Research		SuperJournal
National Libraries of Australia and NZ		JEDDS
National Libraries of Scotland		CAIRNS
NE Wales Institute of HE		SEREN
Newcastle University		HYLIFE
Newcastle University	NetSkills	

HEI	Lead Roles	Partnerships
Newcastle University		DigiMap
North London University	No major involvement	
Northumbria University	HYLIFE	
Northumbria University	IMPEL2	
Northumbria University		ADAM
Northumbria University		eOn
Nottingham Trent University		EEVL
Nottingham Trent University		FIDDO
Nottingham University		FIDDO
Nottingham University		OMNI
Nottingham University		Open Journal Framework
Nottingham University		Parallel Publishing for Trans.
Open University	EDBANK	
Open University		ERCOMS
Open University		Phoenix
Ovid Technologies		HYLIFE (Technical Input)
Oxford Brookes University		RUDI
Oxford University	CEDARS	
Oxford University		BUILDER
Oxford University		MALIBU
Oxford University	Internet Library of Early Journals	
Oxford University		DigiMap
Oxford University		Internet Archaeology
Oxford University		SuperJournal
Oxford, Templeton College	ERIMS	
Paisley University		CAIRNS
Paisley University		SCOPE
Plymouth University		HYLIFE
Plymouth University	Skills for New Info Prof's	
Portsmouth University	No major involvement	
Queen Margaret College		CAIRNS
Queen Margaret College		SCOPE
Queen Mary and Westfield, London		M25 Link
Queen Mary and Westfield, London	Parallel Publishing for Trans.	
Queen's University, Belfast	eJ and Learned Societies	
Queen's University, Belfast		CAIN
Reading University		DigiMap
Robert Gordon College		CAIRNS
Robert Gordon College		SCOPE
Routledge		EDBANK
Routledge		ERIMS
Routledge		ODP - Humanities
Routledge		SuperJournal
Royal Academy of Music		Music Libraries Online
Royal College of Music		Music Libraries Online
Royal College of Physicians London	No major involvement	
Royal Free School of Medicine		OMNI
Royal Holloway London	No major involvement	
Royal Northern College of Music		Music Libraries Online
Royal Postgraduate Medical School London	No major involvement	

HEI	Lead Roles	Partnerships
Royal Scottish Academy of Music and Drama		Music Libraries Online
Royal Society		eSPeRe
Royal Society of Chemistry		CLIC
Royal Society of Chemistry		SuperJournal
Salford University		LAMDA
Scandinavian University Press		ERIMS
School of Advanced Studies London	No major involvement	
School of Hygiene and Tropical Medicine London	No major involvement	
School of Oriental and African Studies London	No major involvement	
School of Pharmacy , London	No major involvement	
School of Slavonic and East European Studies London	No major involvement	
Sheffield Hallam University		RIDING
Sheffield University	RIDING	
Sheffield University	NetLinks	
Sheffield University		ERIMS
South Bank University		HERON
South Bank University	Phoenix	
South Bank University (LITC)	NewsAgent	
Southampton University		MALIBU
Southampton University	CogPrints	
Southampton University	Open Journal Framework	
Southampton University		Internet Archaeology
Southampton University (Geodata Inst)		ERCOMS
St Andrews University		CAIRNS
St Andrews University		HELIX
St Andrews University		SCOPE
St Bartholomew's and the Royal London School of Medicine and Dentistry London	No major involvement	
St Georges Hospital Medical School	MIDRIB	
St Mary's University College, Belfast	No major involvement	
Staffordshire University		InfoBike
Stevan Harnard		Open Journal Framework
Stirling University	HERON	
Stirling University	SCOPE	
Stirling University		EDDIS
Stirling University		FORMATIONS
Stirling University		Sociological Research On-line
Stranmillis University College, Belfast	No major involvement	
Strathclyde University	CAIRNS	
Strathclyde University	CATRIONA II	
Strathclyde University		e Journal environment for Law
Strathclyde University		SCOPE
Sunderland University	No major involvement	
Surrey Institute of Art and Design	ADAM	
Surrey University	EPRESS	
Surrey University	PATRON	

HEI	Lead Roles	Partnerships
Surrey University	Sociological Research On-line	
Surrey University	WoPEc	
Sussex University		SuperJournal
Teesside University	No major involvement	
Thames Valley University	No major involvement	
Trinity College of Music	Music Libraries Online	
Ulster University	CAIN	
Ulster University	eSPeRe	
Ulster University	FORMATIONS	
Ulster University		Eurotext
Ulster University		SuperJournal
UMIST		LAMDA
United Medical and Dental Schools London	No major involvement	
University College, London	LAMDA	
University College, London		SuperJournal
Wales, Lampeter	No major involvement	
Wales, Swansea	No major involvement	
Wales, Bangor	SEREN	
Wales, Cardiff		SEREN
Warwick University	e Journal environment for Law	
Warwick University		SuperJournal
Warwick University		TAPin
Wellcome Centre for Medical Science		OMNI
Wellcome Trust		MIDRIB
Welsh College of Music and Drama		Music Libraries Online
West of England University	ResIDe	
West of England University		ADAM
Westhill College of Higher Education		BUILDER
Westminster University		M25 Link
Westminster University		LAMDA
Winchester School of Art		ADAM
Wolverhampton University		BUILDER
Wolverhampton University		TAPin
Wye College London	No major involvement	
York University		RIDING
York University	Internet Archaeology	
York University		FORMATIONS

Non HEI organisation	Lead Roles	Partnerships
Academic Press		InfoBike
Academic Press		Open Journal Framework
Academic Press		SuperJournal
ALPSP		eJ and Learned Societies
Australian VCs Committee		JEDDS
Bielefield		EDDIS
Biochemical Society		ESPeRe
Blackwell Publishers Ltd		ERIMS
Blackwell Publishers Ltd		ODP - Humanities
Blackwell Publishers Ltd		SuperJournal
Blackwell Scientific		InfoBike
Blackwell Scientific		SuperJournal
Blackwells (Bookshops & Info Services)		HERON
BLCMP		HYLIFE (Technical Input)
BLDSC		EDDIS
BLDSC		RIDING
BMA		OMNI
BMJ Publishing Group		eSPeRe
British Academy		Internet Archaeology
British Computer Society		Open Journal Framework
British Educational Research Association		EducationOn-line
British Institute of Radiology		eSPeRe
British Society for Immunology		eSPeRe
British Sociological Society		Sociological Research On-line
Carfax Ltd		SuperJournal
Chapman & Hall Ltd		SuperJournal
Churchill Livingstone Ltd		SuperJournal
Company of Biologists Publishers		Open Journal Framework
East Dumbartonshire Public Library		CAIRNS
Electronic Press		Open Journal Framework
Elsevier Science Ltd		SuperJournal
EPRG		Open Journal Framework
ESRC Data Archive		ResIDe
Fretwell Downing		MODELS
Fretwell Downing		NewsAgent
Fretwell Downing Informatics		Agora
Fretwell Downing Informatics		EDDIS
Fretwell Downing Informatics		Music Librares On-line
Fretwell Downing Informatics		RIDING
Hutton Getty Picture Collection		HELIX
ICL		InfoBike
Institute of British Geographers		Parallel Publishing for Transactions
Institute of Housing		ResIDe
Institute of Physics Publishing Ltd		SuperJournal
International Imaging Ltd		
ISI		Open Journal Framework
JISC (EDDIS)		JEDDS

Non HEI organisation	Lead Roles	Partnerships
Macmillan	SuperJournal	
MCB University Press		Open Journal Framework
Museum of London		ResIDe
OLF		eOn
Oxford University Press		ERIMS
Oxford University Press		Open Journal Framework
Oxford University Press		SuperJournal
Pitman		ERIMS
Rapid Science Ltd		SuperJournal
Sage Publishing		Sociological Research On-line
Sage Publishing		SuperJournal
SALSER		EDDIS
SEDA		EduLib
Society for Endocrinology		eSPeRe
Society for Endocrinology		SuperJournal
Society for General Microbiology		eSPeRe
SWETS		ACORN
TALIS / Birmingham Library Services		BUILDER
Taylor and Francis		SuperJournal
The Tate Gallery		ADAM
Xerox		Phoenix

APPENDIX C: List of acronyms and abbreviations used

AHDS	Arts and Humanities Data Service
ANGEL	Authenticated Networked Guided Environment for Learning
API	Application Programmer Interface
ASP	Application Service Provision
BL	British Library
BLPES	British Library of Political and Economic Science
BLRIC	British Library Research and Innovation Centre
BUILDER	Birmingham University Integrated Library Development and Electronic Resource
CAIRNS	Co-operative Academic Information Retrieval Network for Scotland
CALT	Committee for Awareness, Liaison and Training (JCALT)
CAMILEON	Creative Archiving at Michigan and Leeds
CEDARS	CURL Exemplars in Digital Archives
CEI	Committee for Electronic Information (JISC)
CLA	Copyright Licensing Agency
CURL	Consortium of University Research Libraries
DLI	Digital Libraries Initiative
DNER	Distributed National Electronic Resource
EDDIS	Electronic Document Delivery - The Integrated Solution
EEDD	End user Electronic Document Delivery
EPRESS	Electronic Publishing Resource Service
FDI	Fretwell Downing Informatics
FIGIT	Follett Implementation Group on Information Technology
GIGA	Global Information Gathering Agent
HE	Higher Education
HEADLINE	Hybrid Electronic Access and Delivery in the Library Networked Environment
HEFCs	Higher Education Funding Councils
HEI	Higher Education Institution
HLMS	Hybrid Library Management System
HYLIFE	Hybrid Libraries of the Future
ICT	Information and Communications Technologies
ILL	Inter Library Loan
IPR	Intellectual Property Rights
JCALT	JISC Committee for Awareness, Liaison and Training
JCEI	JISC Committee for Electronic Information
JISC	Joint Information Systems Committee
JTAP	JISC Technology Applications Programme
KCL	King's College London
LBS	London Business School
LMS	Library Management System
LSE	London School of Economics
MALIBU	Managing the Hybrid Library for the Benefit of Users
MIMAS	Manchester Information Associated Services
MLE	Managed Learning Environment
MLO	Music Libraries On-line
NESLI	National Electronic Site Licensing Initiative
NFF	Non Formula Funding
NPO	National Preservation Office
NSF	National Science Foundation
OPAC	Online Public Access Catalogue
PELICAN	Pricing Experiment Library Information Co-operative Network
PIE	Personalised Information Environment
PO	Programme Office

PVC	Pro Vice Chancellor
RDN	Resource Discovery Network
RLG	Research Libraries Group
RSLG	Research Libraries Strategy Group
RSLP	Research Support Libraries Programme
SCONUL	Standing Conference on National and University Libraries
SCURL	Scottish Consortium of University and Research Libraries
UCISA	Universities and Colleges Information Systems Association
UKNUC	UK National Union Catalogue
UKOLN	UK Office for Library and Information Networking
Xgrain	cross-searching specialist abstracting and indexing databases for learning and teaching
YHUA	Yorkshire and Humberside Universities Association
ZBALSA	Z39.50 broker to locate serials and articles
ZETOC	Enhancements to Electronic Table of Contents service, based on Z39.50.