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Digitised Content in the UK Research Library and Archives Sector

A report to the Consortium of Research Libraries
and the Joint Information Systems Committee

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

Executive Summary

Introduction

In August 2004, the JISC and CURL Digital Content Creation & Curation Task Force issued an invitation to tender for a study of the current provision of digitised collections for researchers in the UK higher education sector. The objectives of this study were to:

- Produce a high level survey of digitised material, both already available and in the process of being created, held in UK research collections across all disciplines
- Survey demand for digitised material and identify gaps in existing provision
- Develop a mechanism for identifying future digitisation priorities
- Review funding structures and opportunities and assess possible ways of funding priority areas
- Recommend standards and formats for future digitisation projects
- Provide an outline action plan for a national digitisation strategy for the UK research community.

JISC and CURL commissioned a team of researchers from the Department of Information Science at Loughborough University to carry out this survey. The study was carried out between 1 November 2004 and 7 March 2005.

Study Methods

The objectives of the study were addressed through desk research, a Web-based questionnaire of research libraries and interviews with key informants. The bulk of the desk research was undertaken during November and December 2004. The desk research covered the following topics:

- Digitised resources available in the UK
- Current and future needs of researchers and users of digitised material
- Standards, formats and guidelines and existing digitisation policies



- Digital infrastructure and support services in the UK
- Funding structures and opportunities for digitisation projects
- Examples of collaboration with publishers
- Strategic initiatives
- International initiatives

Inclusion in the list of digitised resources was dependent on individual resources meeting several criteria, including: contain primary material, digitised rather than born digital material, images of sufficient quality to allow detailed examination and provision of access to a complete document for textual resources.

A Web-based survey of UK research libraries and archives was developed in collaboration with JISC and CURL. This was deemed the most appropriate given the time and resource constraints of the study. The questionnaire included questions on past, current and future digitisation projects, reasons for and against digitisation and experience of in-house and outsourced digitisation and collaborative efforts. The questionnaire was live between 16 December 2004 and 11 February 2005. Fifty-one replies were received from 47 institutions. Only two CURL members did not participate in the study at all. Unfortunately not all respondents were able to provide detailed lists of material to be digitised, even when survey responses were followed up with requests for more detailed information. The response rate and difficulties with providing detailed information were in line with previous, similar surveys carried out by the study team.

Thirty-six in-depth interviews were conducted with representatives of different research disciplines and stakeholder groups. Two other organisations responded to emailed questions. These included:

- Members of JISC and CURL
- Representatives of institutions with digitisation experience, including the three UK national libraries
- The National Archives of the UK and Scotland
- Publishers
- Support services

The research team selected these respondents on the basis of their expertise and experience in digitisation. Some respondents were suggested by CURL and JISC contacts. A core set of questions was developed for each stakeholder group, but interview schedules were tailored according to the roles, experience and expertise of interviewees. The main aim of the interviews was to learn from the knowledge, experience and expertise of the interviewees and build on the data gathered through the desk research and survey.



Main Findings

The study found an impressive amount of digitised material in the sector and there has been considerable expenditure of UK public funds in the creation of digital content, amounting to some £130 million in the last ten years. However, funding of the creation of digital content in the UK and around the world has been piecemeal and completely uncoordinated. In the UK, the National Audit Office has highlighted issues at national level, including risk of duplication, use of diverse standards and the importance of (and opportunities for) collaboration. This study has also found that there is no national oversight for digitisation. It is clear from discussions with various players that there is a need for coordination, but no agreement on how this should be implemented.

Google is changing the world through its investment in digitising content from some of the world's greatest libraries. This highlights the need for a major UK digitisation programme, with a co-ordinated approach. The Google initiative is likely to generate a step change in researcher attitudes towards searchable digitised texts and the library community should be engaging fully with the implications and opportunities this presents

Digitised Content in UK Research Libraries and Archives

Manuscripts and images are the most frequently digitised type of material digitised in libraries and archives, although other types of material, including artefacts, have also been digitised. Publishers are producing some substantial resources by digitising journal back files and monographs. The bulk of material digitised is most relevant to the arts and humanities and social science fields. However, medical image material is also an area where there has been much activity. Many UK digitisation projects have involved selective creation of resources focusing on particular themes or specialist topics, for example prominent individuals, historic events or special "treasures". A few comprehensive projects have focused on particular genres or collections of material, for example medieval manuscripts, newspapers, official publications or census data. These activities have produced, or will produce, substantial resources that potentially will have large audiences. There is also some evidence of collaboration between libraries, archives and museums in digitisation. Some of this collaboration has been by geographic region, for example in Scotland or across Wales. There has also been both national and international collaboration to bring together dispersed collections.

Reasons for digitising

A number of reasons were cited by respondents for digitisation, including improving access generally, and particularly to unique and rare material. Selection criteria identified by this study include relevance to institutional mission, uniqueness or rarity and existence of coherent collections. Demand is another selection criterion. Respondents from libraries and archives mentioned that they had digitised collections to which access is requested more frequently than others and would therefore benefit from being in digital format. Publishers mentioned the market research they carry out for their digitisation projects.



Researcher Needs and Demand for Digitised Resources

While demand is a criterion for selection for digitisation, there is no overview of user needs and demands for digitised content in the UK. There is little literature on existing researcher needs and demand for digitised resources. The British Academy was undertaking a major study in the arts and humanities and social sciences at the time of this study. The results will provide a fuller picture of what is needed and a more accurate gap analysis can be carried out. This still leaves a gap in the sciences and other areas that needs to be addressed effectively. The interviews carried out for this study were not able to provide a comprehensive overview in this area. However, there was a suggestion that the most important resources for scientists are journals and datasets, while other sorts of material are little used. While much current material of interest is already available in digital form, there is much activity in the digitisation of journal back runs. Publishers, or bodies such as JSTOR, carry out a lot of this activity. Some of this activity is subsidised by funding bodies: funding bodies either pay for the cost of digitisation or for publishers to make material they have digitised available for free or at a reduced cost.

Some libraries and archives have prioritised material they want to digitise, but few were able to provide detailed prioritised listings. Much of the information given by survey respondents related to manuscript and image material of particular relevance to the arts, humanities and social science fields. Medieval manuscript collections were mentioned, but more modern archival material was also nominated. More than one respondent also listed medical images. The collections suggested for digitisation are considered by their owners to be rare, vulnerable or valuable in some way. Bodies, such as CURL, JISC and the RLN should undertake additional research into the nature of these collections.. We would recommend carrying out a separate survey of the further education sector, since there was no response from this sector to this study.

However, there is a question of whether material should be digitised just because it is rare or vulnerable, or whether there should be a demonstrable need. While it would make sense for these bodies to take forward digitisation of material held in libraries, this activity should wait until a clear overview of research needs is available. At this point a more comprehensive gap analysis should be conducted. While librarians and archivists are dedicated to supporting researchers and are often good judges of what content will be useful, taking the long-term into account, there is a need to gather more direct input from researchers.

Another issue suggested through this study is that use of digitised material, particularly in the arts and humanities field, is less than optimal because of a lack of researcher awareness and perhaps even resistance in some cases. Another issue is that there is a need to enhance raw digitised content with enhanced functionality such as text-searching capabilities and facilities for manipulation of digitised content. The Arts and Humanities Research Board (now Council) has shown an interest in not only the creation of digitised resources for research, but also the use of information and communication



technologies in the arts and humanities in general through its strategic ICT in Arts and Humanities Research programme. The AHRC ICT Strategy Projects Scheme apparently considers the need for and development of appropriate tools for researchers.

The Research Councils UK should find out more about researcher needs since this is an umbrella body for the UK research councils. Such a survey should be planned and designed through Research Councils UK, but executed through individual research councils. The methodology will have to be customised to the different fields, but should be informed by existing data on searching behaviour so that appropriate retrieval methods and tools are identified as well as the primary content that would be useful. The research councils have various structures in place, such as research programme managers and panels that should be consulted or which could conduct consultations with the research community in different fields. The councils with ICT programmes should perhaps use this vehicle. The data gathered should be analysed at the level of individual research councils and possibly aggregated at national level. A more comprehensive survey of the views of subject associations, academies and royal societies than the limited number of interviews carried out for this study should provide more detailed analysis on researcher needs. An alternative to this approach would be user needs surveys carried out by research libraries, through the Research Libraries Network. This should be a more focused study than the exercise carried out for the Research Support Libraries Group. Researchers may well be more motivated to respond to research bodies than the RLN, but the library community can help to encourage RLN awareness and enhance its impact.

The findings of these studies should inform policies, procedures and strategies of the research councils. This should be shared with the JISC, CURL and/or the Research Libraries Network so that the response to the findings can be co-ordinated. The initial exercise will necessarily be large-scale, but knowledge on needs and demand should be updated periodically. This should be linked to trigger events, for example, periodic strategic reviews of research and/or content creation programmes.

Barriers to Digitisation

Funding Issues

For some projects/organisations, the selection for digitisation material was linked with funding opportunities, cost and resource requirements. For certain material e.g., fragile, rare or unique, it was easier to apply for and be successful in funding applications. Lack of funding, as well as a lack of expertise, is a barrier to digitisation. Digitisation has been funded on a project-by-project basis by a number of different funding bodies, large and small. Major funders have included the Andrew W. Mellon Foundation, the New Opportunities Fund and JISC. While the JISC in particular has funded projects, often in cooperation with other bodies, that aim to provide more comprehensive resources with potentially large audiences, there is a lack of an overarching strategy to co-ordinate digitisation activities in the UK and no national oversight for



digitisation. With a better overview of researcher priorities, funders should develop strategic programmes and/or issue targeted calls for proposals for projects to meet specific gaps.

There is a evidence from the study that organisations planning to digitise have to spend time identifying and exploring funding opportunities We would recommend having a more co-ordinated approach to the identification of funding opportunities. Support bodies already identify potential funding bodies, but the development of a “one-stop shop” for funding information should be developed and maintained. This could provide up-to-date information on funding bodies with links to their Web sites and documentation. It could also provide information on new programmes and calls for proposals. This “portal” could be useful to libraries and archives (in all sectors) and also researchers who wish to start digitisation projects. There are various possible candidates for this, including CURL, JISC, the Research Libraries Network or one of the digitisation support services. The MLA would be another candidate given its remit (emanating from the European Commission) in UK digitisation activities.

Collection Management Issues

Some survey respondents did identify copyright as a factor in selection of material to digitisation. Use of legal experts was also mentioned as a source of expertise consulted by would-be digitisers. There is a specialised copyright clearance (and digitisation) service for the sector in existence, but our findings suggest it is not well used. It is not clear why this is the case, unless digitisers are not aware of its existence. There are now also digitisation services available that could be used by digitisers. Therefore, digitisation activities do not necessarily need to disrupt collection management processes, nor does digitisation need to be integrated into the collection management function. It can be outsourced. Some of our survey respondents outsourced digitisation,, although selection and quality control may have to remain internal activities. Respondents did not comment on how resource intensive these activities are. Given that much digitisation seems to involve at least some external funding and obtaining this funding requires the preparation of funding bids, this process may be disruptive of library operations.

Respondents to the questionnaire survey also seemed concerned about the long-term management of digitised resources, both in terms of funding and expertise. Research libraries planning digitisation projects need to take this into account and plan for it. Funding bodies are now beginning to expect this from proposals. The big question is how will it be funded and whether it is appropriate for funding bodies to provide for on-going maintenance or whether it is the responsibility of digitisers. Digitisers need guidance on long-term management and preservation. They need to be aware of what sources of guidance exist and which support services can assist them. The Digital Preservation Coalition should continue its work on raising awareness and could consider the provision of more case studies from its members and international contacts. The newly established Digital Curation Centre should also be able to help here. Funding bodies (if they do not do so already) and recipients of funding



should consider the use of existing data archives to facilitate safe storage and preservation of digitised resources when planning and funding digitisation projects. Several digital archives already exist in the sector, so libraries do not necessarily have to develop all the systems and infrastructure to store and manage material in the long-term or have to find on-going resources to support these activities.

Cooperation and Coordination in Digitisation

Funding for Digitisation

There is some, but limited, evidence of cooperation between the funding bodies and some are only beginning to think in a strategic way about funding digitised resource creation. It has become evident during the course of the survey that co-ordination is required. We recommend that any “national strategy” will have to be formulated at a very high level and centralised implementation is not be feasible. It is not realistic to expect the various UK public sector funding bodies, never mind other independent and international funders, to develop a unified strategy for funding digitisation in the UK, it may be possible to improve co-ordination. We do not recommend setting up a new body to organise and oversee the implementation of digitisation in the UK; this would take time to set up and cost money that would be better used elsewhere. Funders could work co-operatively, through existing fora, such as Research Councils UK, or through a new forum including the main funding bodies, to co-ordinate activities. It should certainly be possible for the UK public sector funding bodies to do this. The JISC and the research and funding councils should be able to work together. The JISC could act as the link to the research libraries, through CURL and/or the Research Libraries Network, and the Museums Libraries and Archives council could be the link to the lottery funding bodies.

Cooperative Digitisation

There is collaborative activity between research libraries and archives and publishers and other commercial organisations. Some of this activity is subsidised by funding bodies such as JISC, Mellon and Wellcome. While libraries are interested in cooperative digitisation and working with commercial partners, there is some concern at the price of some cooperative, but commercially produced, digitised resources. There are always costs involved in digitisation and someone has to pay. There are various business models for the provision of digitised content that vary in terms of access conditions and pricing models, depending on whether the digitising organisation is for or non-profit, and the type of material digitised. The thing to avoid is the need for the research community to pay very large sums of money to access digitised research material, particularly if that material has originated in the research library and archive sector. Commercial publishers, understandably, need to make an acceptable return on any investment they make.



Commercial publishers are cautious about subsidised and open access models. The Google initiative is currently an unknown quantity, but could have a huge impact on business models and research library interest in digitisation. Publishers who participated in this study are clearly concerned about the implications of Google for future commercial digitisation activities, while libraries are cautiously hopeful. The Google initiative has the potential not only to facilitate the digitisation of library materials for libraries, but for the existence of the digitised material to become easily discoverable through Google services. As mentioned by interviewees, the Google initiative will only be useful if material is digitised to an acceptable standard and if appropriate metadata is created for digitised material. If this is the case, and Google remains committed to the project, this initiative may well prove to be a significant boost for the digitisation of content. Whether this will be systematic digitisation of content to meet needs or cherry picking of significant collections is another matter. CURL and/or the RLN could explore the possibility to taking a nationally co-ordinated approach to the inclusion of UK research libraries in this initiative in future.

While all of the business models explored in this study had disadvantages as well as advantages, it is clear from the various developments that there is increasing scope for public-private partnerships in digitisation. We would recommend that exemplars of “best practice” are developed for use by the education community. The JISC is well placed to achieve this.

Standards, Support and Guidance

Librarians have looked for and adhered to standards in digitisation and JISC has had an important role to play in this. This study has shown that whilst individual projects do things a little differently and that standards and file formats depend on materials digitised and purposes, there is a core set of standards and formats used by many projects. As far as metadata is concerned, library-based projects are mostly using some form of Dublin Core or MARC and using XML and METS encoding for metadata. Archives use the EAD and ISAD(G) schemas for records and finding tools to meet their own needs. Library of Congress Subject Headings are used for subject access in the library sector. There seems to be less standardisation amongst publishers and digitisation services.

Long-term maintenance and preservation are issues of concern to digitisers and funders. Support and guidance on digitisation is sought from a variety of sources. Internal sources of technical, legal and collection management advice are sought, as are external sources. There are many different support services available in the UK for digitising organisations. At their own admission, there is a degree of overlap between these services. Now that digitisation is becoming more established, the time may be ripe to review the services available in order to identify any areas of overlap and explore possibilities for consolidation. This recommendation really applies to the JISC-funded services. In the meantime, it would be useful to have a single point of access to guidance and advice on



different aspects of digitisation, including technical, legal and management guidelines and case studies. The advice would be provided by different services, but the users would have one access route.

Discovery of Digitised Material

There is an issue surrounding the discovery of the existence of digitised material, so that duplication of effort is avoided and researchers can find material of relevance. The results of this study indicate some issues in the creation of metadata records for digitised material. While two thirds of survey respondents said there were records for all material digitised, study respondents mentioned that a lack of bibliographic records was an issue. It seems that, in some cases, records do not exist for the originals and metadata creation is a higher priority than digitisation. Metadata creation is an expensive part of the digitisation process and this activity is one that could have a negative effect on existing library operations. It therefore seems sensible that metadata creation is costed into funding bids and that funding bodies be prepared to fund metadata creation. It seems pointless to digitise without providing the means to retrieve digitised resources. It would also be unfortunate if digitisation of useful resources is delayed or does not take place because of a lack of metadata. Automation of metadata creation and re-use of existing metadata records would also ease this situation. However, the latter approach is likely only to be appropriate for items that are not unique.

The issue of lack of awareness and resistance to use of resources available on the part of researchers needs to be addressed, otherwise large investments in digitising material will be wasted. JISC is already working on this with research councils through its ICT awareness programmes. While digitised collections are likely to be included in institutional catalogues and Web sites, information on digitised resources should also be covered in the search tools used by researchers, including the Research Discovery Network. Some resources already are, but coverage needs to become more comprehensive. Our survey found little evidence of OAI-PMH compliance. Harvesting of metadata records and the provision of search services based on harvesting metadata might be worth exploring. Without more detailed knowledge of how researchers search for information, it is difficult to say which is the best approach here. From what evidence we found, search services might be more appropriate for scientists and browsing through, for example, the RDN might be better for arts and humanities researchers.

A comprehensive listing of existing digitised resources should facilitate the analysis of gaps in the provision of digitised content. The creation of new digitised resources to meet identified needs could also be facilitated by a list, not only of what has already been digitised, but also of what is in the process of being digitised. One of the deliverables of this study is a list of digitised resources available to the UK research community. While this study included a comprehensive search for digitised resources, this search was complicated and may well have missed important resources. There is a need for a better mechanism for identifying relevant projects and collections. There is a



precedent here in preservation microfilming. In the late 1980s and early 1990s, the Andrew W. Mellon Foundation funded the Mellon Microfilming Programme in the UK. This programme involved filming material to preservation standards; it also involved cataloguing material digitised and submitting records to various registers, both in the UK and overseas. This register was useful in that collection managers could avoid duplication by identifying material that had already been microfilmed.

Registers and catalogues for digitised material already exist. The systematic submission of information on digitisation projects and material digitised to a national and perhaps international register should be investigated. A UK Register of Digital Surrogates, similar to the National Register of Archives, could facilitate greater collaboration and cooperation. As the register develops, gaps in provision will become increasingly clear. The register could also help in the identification of relevant projects and collections. The appropriateness of existing registers, for example the UK register of preservation surrogates and the OCLC/DLF registers should be investigated, as should the nature of the information to be submitted and the best methods for submission. It may be necessary to modify existing registers to allow for information on projects and digitised resources, so the registers in other countries mentioned in this report should be examined as models. Any system would need to be simple and inexpensive to contribute to, in order to maximise participation.

Digitising organisations may well need to be motivated to submit information on projects and digitised material. This may be difficult in the private sector, although publishers may find benefits in a wider awareness of their digitised products and services. There are precedents for the submission of records to registers by commercial publishers (ProQuest). Funding bodies should stipulate that recipients of grants should submit records as a condition of funding. How information should be submitted retrospectively is an issue that needs to be explored. CURL and/or the Research Libraries Network should take the lead on this work. However, there needs to be a coordinated approach, so JISC may be the most appropriate body to work with the research and funding councils on this. JISC could also work with other major funding bodies to ensure a coordinated approach.

Conclusion: A National Framework for Digitisation

It is clear from discussions with various players that there is a need for coordination, but no agreement on how this should be implemented. The findings of this study indicate that any future national approach would have to be a co-ordinated and distributed, rather than centralised, one. A UK-wide strategy would assist in filling gaps in provision, cut across the efforts of individual funders and digitising organisations, reduce overlaps between support services and assist in the provision, take up and use of open access resources. A UK-wide approach would assist in overcoming institutional issues,



such as successful project management being impeded by costs, varying file and metadata formats and preservation problems. A crucial aspect of any national strategy is that it should reflect researchers' priorities.

Summary of Recommendations

1. Study the results of the British Academy and identify the implications for resource provision in the arts and humanities research community (CURL, RLN).
2. Continue to focus on raising awareness and training and tools for using digitised content (JISC, AHRB, e-Science programme, etc.)
3. Establish ongoing and systematic research into researcher needs, particularly in the sciences and social sciences where this is a high priority. (JISC to discuss with Research Councils UK, RLN to discuss with associations and societies).
4. Results into researcher needs should be coordinated and responses coordinated at a UK level (Research Councils UK, JISC, CURL).
5. Establish ongoing and comprehensive gap analysis to identify priorities for the digitisation of material (CURL, JISC, Research Libraries Network)
6. Funders should further develop strategic programmes for funding resource creation in collaboration with others, whilst retaining some funds for high quality speculative bids (CURL, JISC, Research Councils)
7. Examine alternative approaches to speed up and reduce the cost of metadata creation should be explored, including: funding body support for this activity, automation and possibly outsourcing (CURL, RLN, JISC)
8. Establish a UK Register of Digital Surrogates, similar to the National Register of Archives, could facilitate greater collaboration and cooperation. (CURL, JISC, RLN)
9. Create a single point of information on current and previous Digitisation projects. (CURL, JISC, RLN)
10. Funding bodies should include provision of information to digitisation registers as a condition of funding (Research Councils, JISC to discuss with other major funding bodies)
11. Improve discovery of digitised materials should be investigated (JISC and the MLA through the Common Information Environment).
12. Examine potential for consolidation of existing JISC support and advice services where appropriate (JISC)
13. Encourage the use of current standards as far as possible (Common Information Environment)
14. Create a single point of information on funding opportunities (CURL, JISC, RLN, MLA)
15. Create "best practice" exemplars for public-private partnership collaboration (JISC)



16. Continue to focus on raising awareness and training and tools for digital preservation through the Digital Preservation Coalition and Digital Curation Centre. (JISC) .
17. Encourage the recipients of funding to use existing data archives to facilitate safe storage and preservation of digitised resources when planning and funding digitisation projects (JISC and CURL to discuss with funding bodies and research libraries respectively)
18. Hold a symposium with key national and international representation on how a UK-wide digitisation strategy could be co-ordinated, including the creation of a forum for the ongoing sharing knowledge, developing policy and implementation plans.

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Acronyms

AAC	Advanced Audio Coding
AAD	Access to Archival Databases
AGLS	Australian Government Locator Service
AHDS	Arts and Humanities Data Service
AHRB	Arts and Humanities Research Board
AVI	Audio Video Interleave
BICI	Book Item and Component Identifier
BL	British Library
BnF	Bibliothèque Nationale de France, National Library of France
BOPCRIS	British Official Publications Collaborative Reader Information Service
BUFVC	British Universities Film and Video Council
CDDA	Centre for Data Digitisation and Analysis
CEDARS	CURL Exemplars in Digital ARchiveS
CFEO	Chopin's First Editions Online
CURL	Consortium of Research Libraries
DC	Dublin Core
DCC	Digital Curation Centre
DCMES	Dublin Core Metadata Element Set
DCMS	Department for Culture, Media and Sport
DEL	Department for Employment & Learning, Northern Ireland
DfES	Department for Education and Skills
DFG	Deutsche Forschungsgemeinschaft, German Research Foundation
DIAMM	Digital Archive of Medieval Music
DNER	Distributed National Electronic Resource



DOI	Digital Object Identifier
DTI	Department of Trade and Industry
DVD	Digital Video Disc
EAD	Encoded Archival Description
ECCO	Eighteenth Century Collections Online
EDINA	Edinburgh Data and Information Access
EEBO	Early English Books Online
eLib	Electronic Libraries Programme
ESDS	Economic and Social Data Service
ESRC	Economic & Social Research Council
FE	Further Education
GDZ	Göttinger Digitalisierungszentrum, Centre for Retrospective Digitisation
GIF	Graphic Interchange Format
GIS	Geographic Information System
HE	Higher Education
HEDS	Higher Education Digitisation Service
HEF	Higher Education Funding
HEFCE	Higher Education Funding Council for England
HEFCW	Higher Education Funding Council for Wales
HERON	Higher Education Resources ON-demand
HLF	Heritage Lottery Fund
ICT	Information and Communication Technology
IDP	International Dunhuang Project
IE	Information Environment
ISBN	International Standard Book Number
ISSN	International Standard Serial Number
ITN	Independent Television News (UK)
JANET	Joint Academic NETWORK
JISC	Joint information Systems Committee
JPEG	Joint Photographic Experts Group
LoC	Library of Congress
LSE	London School of Economics
MAAS	Managing Agent and Advisory Service
MARC	MAchine-Readable Cataloguing
METS	Metadata and Encoding Transmission Standard



MIMAS	Manchester Information & Associated Services
MINERVA	Ministerial Network for Valorising Activities in digitisation
MIT	Massachusetts Institute of Technology
MLA	Museums, Libraries and Archives Council
MODS	Metadata Object Description Schema
MPEG	Moving Picture Experts Group
NAO	National Audit Office
NAS	National Archives of Scotland
NDF	National Digital Forum
NEDLIB	Networked European Deposit LIBrary
NID	Namespace Identifier
NISO	National Information Standards Organization (USA)
NLA	National Library of Australia
NLS	National Library of Scotland
NLW	National Library of Wales
NOF	New Opportunities Fund
NREN	National Research and Education Network
NSF	National Science Foundation
NSS	Namespace Specific String
OAI-PMH	Open Archives Initiative Protocol for Metadata Harvesting
OAIS	Open Archival Information System
OCLC	Online Computer Library Center
OCVE	Online Chopin Variorum Edition
ODL	Oxford Digital Library
OMII	Open Middleware Infrastructure Institute
OST	Office of Science and Technology
OTA	Oxford Text Archive
PADI	Preserving Access to Digital Information
PC	Personal Computer
PDF	Portable Document Format
PNG	Portable Network Graphics
ppi	Pixels Per Inch
PURL	Persistent Uniform Resource Locator
RDF	Resource Discovery Framework
RDN	Resource Discovery Network
RLN	Research Libraries Network



RLS	Resources for Learning in Scotland
RoDI	Register of Digital Initiatives
RSC	Royal Society of Chemistry
RSLG	Research Support Libraries Group
RSLP	Research Support Libraries Programme
SCAN	Scottish Archive Network
SCRAN	Scottish Cultural Resource Access Network
SGML	Standard Generalized Markup Language
SHEFC	Scottish Higher Education Funding Council
SICI	Serial Item and Contribution Identifier
TASI	Technical Advisory Service on Images
TCP	Text Creation Partnership
TEI	Text Encoding for Interchange
TIFF	Tagged Image File Format
UKDA	UK Data Archive
UNESCO	United Nations Educational, Scientific and Cultural Organization
URL	Uniform Resource Locator
URN	Uniform Resource Name
VADS	Visual Arts Data Service
W3C	World Wide Web Consortium
WAV	WAVEform audio format
XML	eXtensible Markup Language

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1 Introduction

Technical advances have considerably changed the library and information environment in recent years. The ability to generate, amend and copy information in digital form, to search texts and databases, and to transmit information rapidly over networks has led to a dramatic growth in the application of digital technologies¹. In the UK, it became clear in the 1990s that digital information would play a major role in higher education². There has been considerable investment in a national digital network for the UK tertiary education and research sector. This includes the provision and development of a national academic network (JANET). The eLib programme explored a considerable number of issues in an attempt to meet the challenges of a fast developing digital environment and paved the way for the development of the future Information Environment.

Since eLib, the UK library world has made significant advances in the development of digital content services. Support services tackling many issues identified through eLib have been established and developed. These issues include access to and the preservation and maintenance of digital resources. Examples include the UK Data Archive³, the Arts and Humanities Data Service (AHDS)⁴, the Higher Education Digitisation Service (HEDS)⁵, and the Resource Discovery Network (RDN)⁶.

Many knowledge institutions are involved in digitising their collections. Libraries are digitising books, manuscripts, images and other types of material on the basis that “one is convinced of the continuing value of such resources for learning, teaching, research, scholarship, documentation, and

¹ Feeney, Mary, ed. *Digital culture: maximising the nation's investment*, 1999, p. 8.

² Whitelaw, A. & G. Joy. *Summative evaluation of Phase 1 and 2 of the eLib initiative: final report*. www.ukoln.ac.uk/services/elib/info-projects/phase-1-and-2-evaluation/elib-fr-vl-2.pdf, 2000, [accessed 03.09.2004].

³ *UK Data Archive is a centre of expertise in data acquisition, preservation, dissemination and promotion*. <http://www.data-archive.ac.uk/>.

⁴ The Arts and Humanities Data Service (AHDS) <http://ahds.ac.uk/> is a UK national service aiding the discovery, creation and preservation of digital resources in and for research, teaching and learning in the arts and humanities.

⁵ Higher Education Digitisation Service (HEDS) <http://heds.herts.ac.uk/> provides advice, consultancy, and a complete production service for digitisation and digital resource development and management to the higher education sector, museums, public and national libraries, archives and other not-for-profit organisations.

⁶ The Resource Discovery Network (RDN) <http://www.rdn.ac.uk/> is a cooperative network consisting of a central organisation and a number of independent service providers called hubs offering subject portals).



public accountability”⁷. The commercial sector is also involved in digitisation. Publishers are digitising their own material or material held elsewhere. Generally digitisation serves one (or more) of three purposes: enhanced access to physical information artefacts, preservation of original artefacts through reformatting and provision of access to surrogates, and commercial exploitation of information assets.

While there has been much digitisation activity in the UK, particularly over the last decade, there is no UK-wide digitisation strategy. A recent survey⁸ showed that the majority of digitisation projects are small scale and carried out in isolation. Projects have used a variety of standards and formats and there has been some duplication in the selection of material to be converted. Digitisation strategies vary in the rationale for digitisation, the aims of projects and the selection criteria used. Deegan confirms this:

There is a huge diversity in the methods, techniques, hardware, software, standards and protocols employed and what is presented here is the merest fraction of the digital activity that the libraries [of the world] are engaged in.⁹

A recent report has highlighted issues related to digitisation at the national level, including risks of duplication, use of diverse standards and importance and opportunities of collaboration¹⁰.

The digitisation programmes that have been initiated in the UK have been funded by a number of different bodies, such as JISC and various UK lottery-funding bodies. While the resources created may be of interest to the research community, the funding bodies have not hitherto worked together.

There are some examples of successful collaborative digitisation projects involving UK participants, including the Scottish Cultural Resource Access Network (SCRAN), and the International Dunhuang project. Successful coordinated efforts in other countries include the French Gallica project (<http://gallica.bnf.fr/>) and Denmark’s Electronic Research Library (www.deff.dk). Frameworks are emerging to support collaborative research and development of digital content, including national and multinational strategies for the digitisation of the cultural heritage. The European Commission report *Coordinating digitisation in Europe*¹¹ gives an overview of digitisation funding, collaboration and strategic initiatives in all EU countries. UNESCO is maintaining a register of some significant digitisation efforts worldwide¹².

⁷ Kenney, A.R. & O.Y. Rieger, eds. *Moving theory into practice: digital imaging for libraries and archives*, 2000, p. 1.

⁸ Carried out by Bültman.

⁹ Deegan, Marilyn & Simon Tanner. *Digital futures: strategies for the information age*. New York: Neal-Schuman, 2002.

¹⁰ National Audit Office. *The British Library - providing services beyond the Reading Rooms*. http://www.nao.org.uk/publications/nao_reports/03-04/0304879.pdf, 2004, [accessed 03.09.2004].

¹¹ European Commission. *Coordinating digitisation in Europe: progress report of the National Representatives Group: coordination mechanisms for digitisation policies and programmes 2002*. <http://www.minervaeurope.org/publications/globalreport/globalrep2002.htm>, 2003, [accessed 03.09.2004].

¹² http://portal.unesco.org/ci/en/ev.php-URL_ID=1538&URL_D0=DO_TOPIC&URL_SECTION=201.html



CURL and JISC believe that digitised material will increasingly be an important component of the array of resources available to the research community. Indeed researchers increasingly expect material to be available to them in digital form. It is understood that future research collections will increasingly include material resulting from digitisation efforts, but:

It will not be possible nor practical to digitize everything in a collection, and, generally, there will only be one opportunity to digitize a collection, as such projects are expensive and require a significant capital investment to start up.¹³

Given the fragmented nature of digitisation efforts until now, this is an opportune moment to stand back and review the situation, with the aim of assessing the needs of researchers, how well they are being met and how provision of digitised collections should be managed in the future.

1.1 The Digital Content in the Library & Archive Sector Study

In August 2004, the JISC and CURL Digital Content Creation & Curation Task Force issued an invitation to tender for a study of the current provision of digitised collections for researchers in the UK higher education sector. The objectives of this study were to:

- Produce a high level survey of digitised material, both already available and in the process of being created, held in UK research collections across all disciplines
- Survey demand for digitised material and identify gaps in existing provision
- Develop a mechanism for identifying future digitisation priorities
- Review funding structures and opportunities and assess possible ways of funding priority areas
- Recommend standards and formats for future digitisation projects
- Provide an outline action plan for a national digitisation strategy for the UK research community

JISC and CURL commissioned a team of researchers from the Department of Information Science at Loughborough University to carry out this survey. The study was carried out between November 2004 and March 2005. The proposal for this study included the following outputs:

- A list, based on desk research and questionnaire survey, of what material is available in digitised form;

¹³ Hughes, Lorna M. *Digitizing collections. Strategic issues for the information manager*, 2004, p. 32.



- Indications, based on the desk research, questionnaire survey and interviews, of types of material currently difficult to access, dispersed material that could be brought together digitally, popular, unique and rare material that is not available digitally with an estimated figure for material requiring digitisation;
- A review of digital collection management issues.
- An indication of current and projected future needs of researchers and users of digitised material.
- A discussion of the reasons for digitisation in both the commercial and public sectors and some examples of public and private sector collaboration. An exploration of reasons for not digitising.
- A set of recommendations on standards and formats, taking into account existing sources;
- Recommendations on metadata standards including discovery, administrative and preservation metadata;
- An overview of the UK's infrastructure both relating to network provision and availability of support services including access, preservation and rights management;
- A survey of current UK strategic initiatives;
- A survey of global trends, including digitisation strategies and initiatives in other countries and an assessment of their relevance to the UK;
- An assessment of the potential for collaboration, for example between libraries, cross-domain, private-public partnership, and assess the potential for a UK-wide strategy;
- A review of funding structures and funding opportunities for digitisation projects, including funding and research councils, private foundations and charities and recommendations on how to proceed in this area;
- A discussion of possible business models;
- Suggestions for a mechanism to support action in this area, including a way of identifying what digitised material already exists.

2 Research Methods

The objectives of the study were addressed through desk research, a Web-based questionnaire of research libraries and interviews with key informants.

2.1 Desk Research

The bulk of the desk research was undertaken during November and December 2004. Bibliographic databases, print and e-journals were all identified and searched. However, the Web was the main source of information.

The desk research covered the following topics:

- Digitised resources available in the UK
- Current and future needs of researchers and users of digitised material
- Standards, formats and guidelines and existing digitisation policies
- Digital infrastructure and support services in the UK
- Funding structures and opportunities for digitisation projects
- Examples of collaboration with publishers
- Strategic initiatives
- International initiatives

One of the main outcomes of the desk research was a list of digitised resources available to UK-based researchers. In order to locate such resources, the links to case studies or examples of best practice provided on the Web pages of support services such as the NOF-digitise, TASI and AHDS Web pages were searched. Websites of large research libraries were searched for links to resources as was the Resource Discovery Network and existing inventories identified. Finally, Web searches under the terms “digitisation”, “digitization”, “digital library” and “digital resource” yielded further links.



In order to be included in the list of resources, the individual resource had to contain primary material, not just catalogue records or metadata. The material must also have been digitised, as the remit of this study excluded born digital material. In the case of image resources, the images must be high resolution allowing detailed examination (particularly in the case of manuscripts, writing tablets, diaries etc). Text resources should provide access to a complete document where possible. The resources had to contain at least 500 images or items. Many resources were evaluated but a significant number were not included as they did not satisfy the selection criteria.

2.2 Questionnaire Survey

The desk research revealed gaps in publicly available information on availability of resources, details of planned projects and wish lists of institutions. Therefore the desk research was supplemented by a questionnaire survey of UK research libraries and archives. The questionnaire survey (see Appendix A) was developed in collaboration with JISC and CURL. It included thirty-four questions on past, current and future digitisation projects, reasons for and against digitisation and experience of in-house and outsourced digitisation and collaborative efforts.

The questionnaire was hosted on the Loughborough University website and sent to three respondents as a pilot study. Two respondents completed the questionnaire, however only one provided detailed feedback. The time taken to complete the questionnaire was given as 20 minutes and the respondent identified some repetitive questions and also stated that answering some of the questions would require excessively time-consuming extensive research about digitisation activities. The questionnaire was altered accordingly. The point on the inconvenience of providing detailed information, proved to be a telling one for the identification of material to be digitised in the future, and many respondents did not provide the amount of detail hoped for, and if they did provide detailed data, it was in a format (for example a printed volume or a masters dissertation) that was difficult or impossible to integrate with other responses in such a short study.

The questionnaire went live on 16 December 2004. The survey link was advertised and distributed to the library and archive sector through the CURL and JISC Websites, as well as the SCONUL mailing list. CURL sent an email to all CURL directors on 15 December 2004 (see Appendix B) requesting that the questionnaire survey link be forwarded to appropriate staff involved in digitisation activities. The same day, the link was posted to six JISC-lists (History-digitisation, JISC-development, LIS-ACQ, LIS-link, NOF-digi, SCOTSNOF). On 5 January 2005, reminder emails were sent out via the same channels. The questionnaire remained live until the end of the project and the deadline for submission was extended several times to accommodate late respondents and institutions that had become aware of the survey shortly before the initial deadline of 31 January. The final deadline was February 11; hence, the questionnaire was available for eight and a half weeks.



A Web survey approach was deemed the most appropriate given time and resource constraints. Ideally, the questionnaire would have been sent directly to individuals that had been identified as having the requisite experience and expertise. The Web-based approach may also have deterred respondents from seeking out the detailed information on resources created and funding that JISC and CURL would have ideally liked. However, the project team's previous experience of questionnaire surveys covering similar topics suggested that respondents would find this information time consuming and difficult to collate whatever the questionnaire format ^{14 15}.

The survey responses were pasted into an Excel spreadsheet. If a "details" field was filled in but the associated tick box was not activated, this was done during encoding. Similarly, if a comment mentioned that "all the above apply" without there being ticks in the boxes, all the fields were counted as active during the encoding, but they were not ranked. Where respondents indicated that their institution held material that ought to be digitised but did not provide details, they were asked for further information by email. Nine out of fourteen institutions contacted replied, while some provided more detail some were only able to provide links to Web pages.

Percentages were calculated from the number of respondents that responded to individual questions (e.g. for example some questions could only be answered by institutions that had carried out some digitisation).

Fifty-one replies were received from 47 institutions. These included 23 out of 29 CURL members. Four of these institutions were included in the interviews, so only two did not participate in the study at all. While most responses came from academic libraries or archives, the questionnaire had also reached the Library of the Society of Antiquaries in London and the Archaeological Data Service (ADS). However, the FE institutions that asked for a late extension to the survey deadline did not, in the end, send any responses.

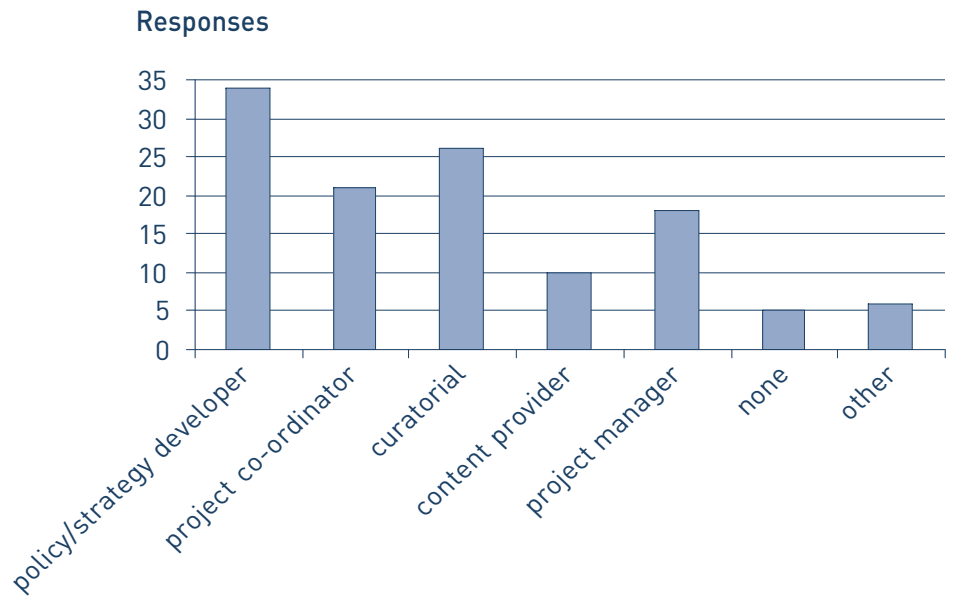
Fifty out of fifty-one respondents identified their institution and forty-nine out of fifty-one provided their job title.

¹⁴ P.J. Astle & A. Muir. Digitisation and preservation in public libraries and archives. *Journal of Librarianship and Information Science* 34(2) 2002, 67-79.

¹⁵ Ayre, C. & A. Muir, *Right to preserve? Copyright and Licensing for Digital Preservation project final report*. 2004.



Figure 1
Role in digitisation activities



The question was intended for all respondents and allowed multiple responses. Two respondents did not answer this question.

The predominant roles were high level: policy/strategy developer, project co-ordinator and, to a lesser extent, project manager. However, replies were also received from fundraising and e-services staff. This distribution may reflect the dissemination method as the link to the online questionnaire was distributed to the CURL-directors list with the instruction to forward the link to the person(s) in charge of projects. Combinations of managerial with curatorial roles were frequent. For example eighteen respondents said they were both strategy/policy developers and curators, while fifteen said they were both curators and project co-ordinators and eight combined project manager and curator roles. Other roles identified included:

- Advisory, delivery and long term preservation (ADS),
- Project director
- Setting up links via web pages to digitised content
- Fundraising
- Digitisation programme manager
- Serves both university and external clients
- No digitisation at all

2.3 Interviews

Thirty-six in-depth interviews were conducted with representatives of different research disciplines and stakeholder groups, including:

- Members of JISC



- Members of CURL
- Representatives of institutions with digitisation experience
- The three UK national libraries
- The National Archives of the UK and Scotland
- Publishers
- Support services

Two other organisations responded to emailed questions. For a full list of interviewees, see Appendix C. The research team selected these respondents on the basis of their expertise and experience in digitisation. Some respondents were suggested by CURL and JISC contacts. Each respondent was contacted by email (see Appendix D) or by telephone and a date was arranged for a meeting.

A core set of questions was developed for each stakeholder group, but interview schedules were tailored according to the roles, experience and expertise of interviewees. The interviews were recorded and transcribed. Each interview was analysed using the qualitative data analysis software, Atlas/ti. The interviews were then compared to identify common themes and similarities and differences in practices and views.

3 Digitised Resources Available in the UK

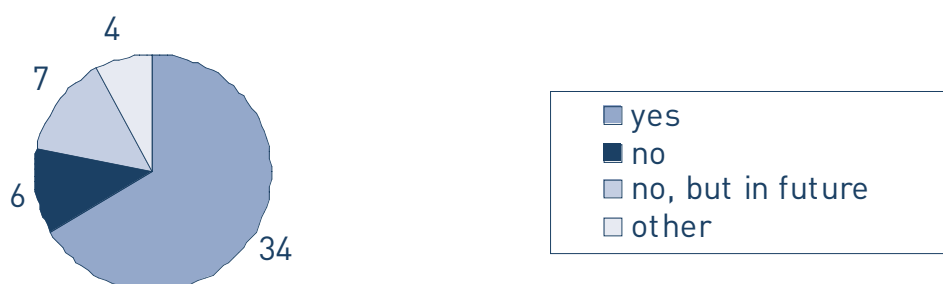
This section reports the survey and interview findings on digitisation activities in UK academic and research libraries and archives. It also provides an overview of digitised resources that are, or will soon become, accessible to the UK research community. A list of UK digitised resources, derived from the desk and primary research, (see Appendix F) strives to be inclusive, whereas a similar list of international resources (Appendix F) provides only an outline of available resources. A resource is included if it is relevant to (although may not be specifically aimed at) higher education and research. The list is limited to digitised material and does not take into account resources that include born digital material.

3.1 Digitisation Activities – Survey Results

Respondents were asked about their current and past digitisation activities.

Figure 2

Has your institution digitised anything?



All fifty-one respondents answered this question and two thirds have engaged in digitisation activities. Twelve institutions have not digitised anything but seven of these are at the planning stage of their first project. Three respondents did not consider the amount of digitisation done so far to be large enough to tick “yes”, and the remit of the ADS does not include digitisation. Twenty-three respondents provided URLs for their digital resources (see Appendix



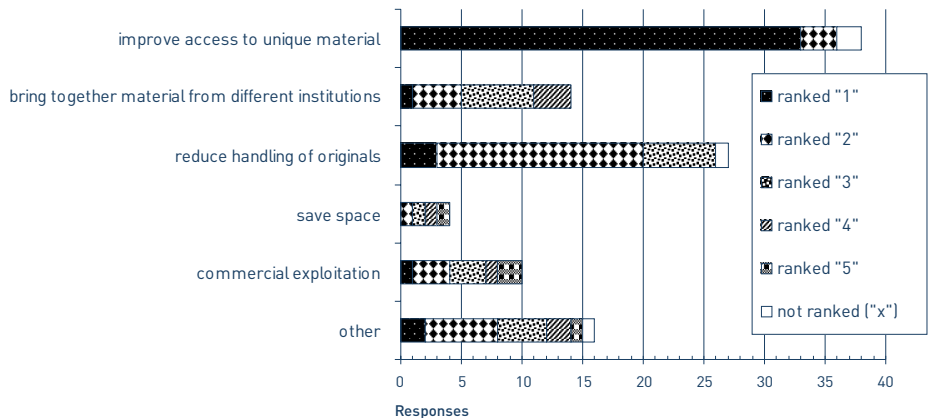
F), although access to some of these is restricted. Four more respondents mentioned that their (project) Website should become available soon, but did not provide a URL.

3.1.1 Reasons for Digitising

All of the thirty-four institutions with digitisation experience (digitisers) gave reasons for doing this. Respondents were able to select multiple responses and were asked to rank their responses, with 1 as the most important reason and so forth.

Figure 3

Reasons for digitisation (Ranked¹⁶)



Improved access was selected most frequently and ranked most highly, reduced handling comes second whereas building virtual collections was seen as less important. Frequent "other" responses were: to showcase collections, support (distance) learning, teaching and research. Less frequent reasons were to:

- make use of the functionalities of digital technology (specifically: for comparing manuscripts)
- test "tools, techniques, technologies and standards
- use available external funding (reactive digitisation in its purest form?).
- manage content effectively
- make use of economies of scale - e.g. "we use the HERON service/changes to CLA licence will all help improve student access to e-books and journals - plus development of rich media (e.g. ERA licence changes for off air recordings this year also)"
- document national heritage.
- Another, puzzling, reason was preserving "born digital" material.

¹⁶ There is a count for non-ranked votes because a few submissions selected criteria but did not rank them.

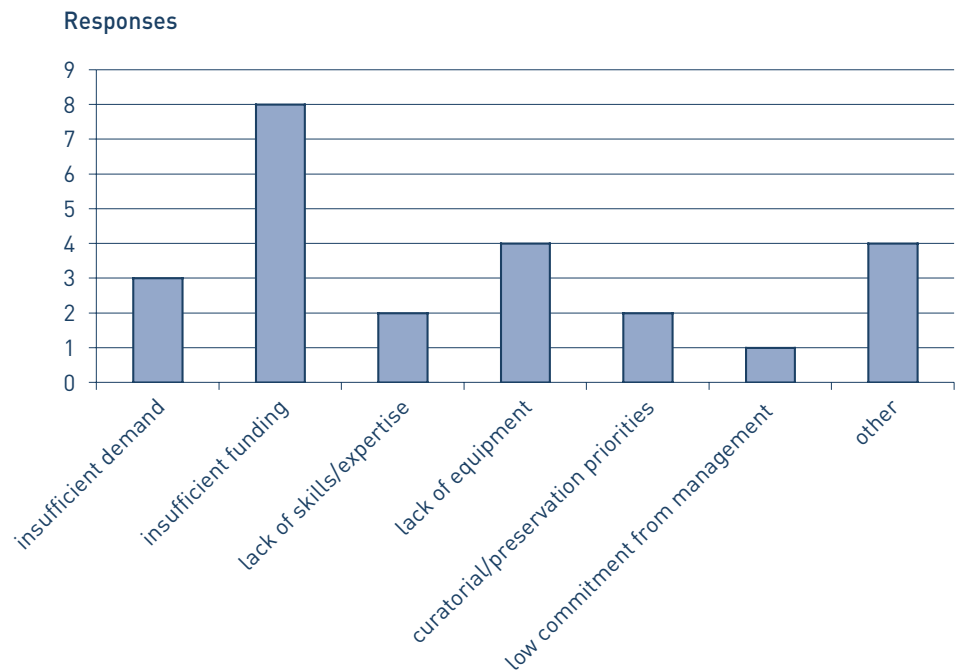


3.1.2 Reasons for not Digitising

Eight of the thirteen institutions that have not been involved in digitisation gave reasons for this. However, three digitisers also answered this question. Respondents were able to give multiple responses. The main reason for not digitising is a general lack of resources, mainly funding, but also equipment and expertise. Copyright restrictions (2) and low priority (2) were “other” reasons given.

Figure 4

Reasons for not digitising



Interviewees suggested similar reasons for not digitising material. Budget constraints are a prominent hindrance to digitisation, but lack of training, data ownership issues and prioritising digitisation of finding aids were also mentioned.

3.2 Digitised Resources

In the course of identifying digitised material through the desk research, it became clear that some working definitions were required to clarify discussion of digitisation activities and the resulting digitised material.



Table 1

Classification of Digitisation Activities

Collection	a number of files created in the course of a project (e.g. BOPCRIS, JSTOR, the British Library's Turning the Pages).
Cluster	a number of projects created by a single institution (e.g. American Memory (Library of Congress), Am Baile (Highlands Council and partners), Gathering the Jewels (consortium of Welsh cultural organisations)).
Inventory	a list of collections not necessarily created by the list author (e.g. Enrich UK, DSpace, Memory of the World (UNESCO)).
Repository	place where digital data is stored and maintained
Gateway/Portal	web site that provides a starting point to other resources on the Internet.
Resource	General term for collections, inventories etc.

These classifications have been used to classify the list of resources available in the UK (see Appendix F).

3.2.1 Creators

The survey was restricted to UK based academic and research library and archive institutions. The largest projects identified in the desk research originate in national libraries. Examples include:

- The National Library of Australia's online exhibitions and digital collections
- The Bibliothèque nationale de France's Gallica
- The Library of Congress' American Memory

Other creators include foundations and commercial enterprises, including the Mellon-funded JSTOR, the multi-partner Million Book Project, Chadwyck-Healey's Early English Books Online, and the recently announced partnerships between Google and libraries. Other producers include museums, galleries, university libraries and archives.

3.2.2 Materials digitised

Resources identified in the desk research were created either indirectly from surrogates (mostly microfilm or photographs) or directly from a wide range of materials such as:

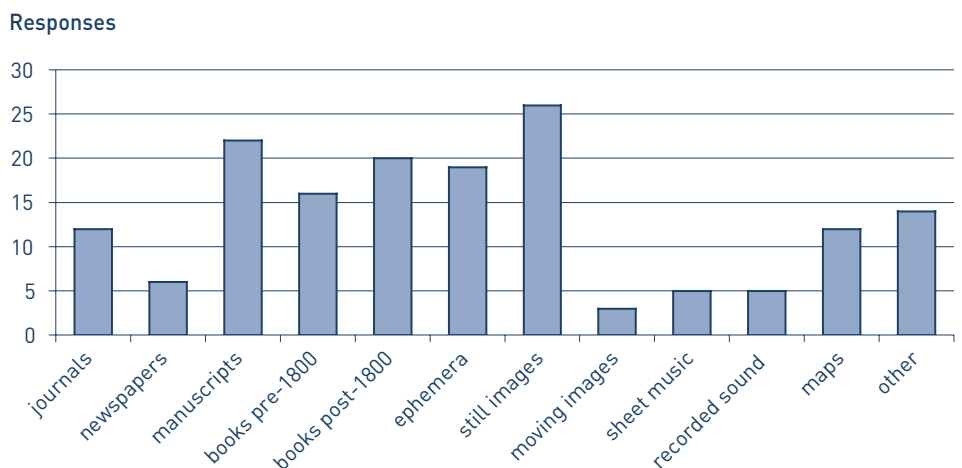
- artefacts
- drawings
- letters
- manuscripts
- maps
- printed music sheets
- newspapers



- novels
- official documents
- papyri
- photographs
- scholarly publications
- sound recordings
- statistical records
- text books
- wooden writing tablets

The survey included a question on the types of material digitised by UK institutions. The responses revealed that still images and manuscripts were most frequently digitised. This is possibly because their conversion provides the best return on investment; the capture procedure for both materials is relatively simple but dramatically improves access to the materials. Artefacts and artworks were mentioned five and three times, respectively. A few projects covered educational material such as reports, theses and exam papers. The most unusual original materials included shoes, needlework and bindings. Two respondents had digitised the entire range of materials shown in the figure below.

Figure 5
Materials digitised



3.2.3 Subject content of digitised resources

- From the desk research it was clear that a large proportion of the resources available are relevant for the arts & humanities research community. Fewer are relevant for social scientists and there is little in the natural and physical Sciences area. The nature of research in the different sectors no doubt contributes to this distribution. It is probably safe to say that while arts



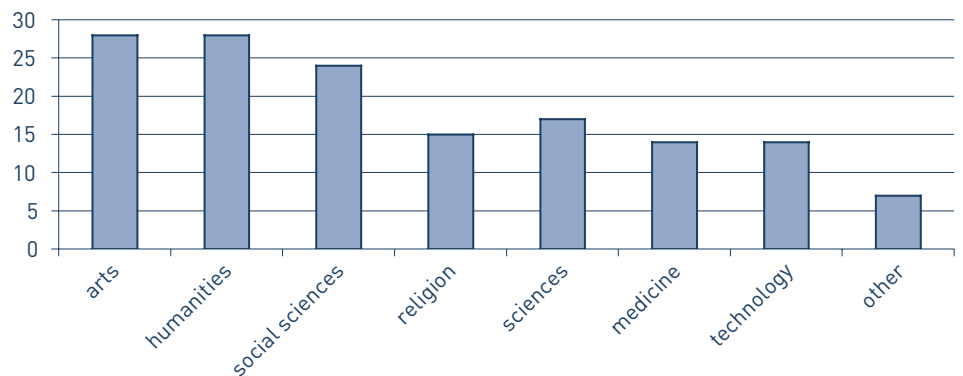
and humanities researchers often use older materials, the pure scientists usually require more current information, much of which is born digital. Much of the digitisation activity in this sector involves journal back files.

The survey also included a question of subject of materials digitised. The responses to this question confirmed the findings from the desk research. Again the predominant subjects are arts, humanities and social sciences.

Figure 6

Subject areas of digitised materials

Responses



Other subject areas include law and jurisprudence (2 respondents), genealogy and leisure pursuits. In one instance, the digitisation project was intended as a “taster”, hence covered the whole diversity of special collections. Two respondents indicated that a wide spectrum of subjects is covered by their activities.

For each of the general subject categories given in the survey, roughly half the respondents provided details on subjects and it appears that some subjects are classified under different headings, e.g. history of art was listed under “arts” and under “humanities” by different respondents.

The following table shows the subjects specified by respondents, organised by the general categories provided in the survey:

Table 2

Subject areas digitised

Arts	Archaeology Architecture Art Crafts English language and literature Fashion History of art History of Art Literature (Icelandic project and sample items from other collections) Music
-------------	---



Humanities	<ul style="list-style-type: none"> Archaeology and historical environments Classics Economic history History History of art Latin-American studies Literature Medieval and renaissance studies Persian manuscripts Philosophy
Social sciences	<ul style="list-style-type: none"> Economic history Economics Politics Social anthropology
Religion	<ul style="list-style-type: none"> Christian, Jewish, Oriental/Asian texts Church plans
Sciences	<ul style="list-style-type: none"> Archaeology and historical environments Astronomy Biology Chemistry Geology History of science Mathematics Physics Statistical sciences
Medicine	<ul style="list-style-type: none"> Anatomy Biology Clinical sciences History of medicine Physiology Psychology Public health
Technology	<ul style="list-style-type: none"> Aeronautics Civil engineering Engineering History of science

3.2.4 Selection criteria

All the representatives of projects and digitising institutions interviewed approached digitisation in different ways and reported different experiences. In the past, many digitisation projects were small scale and involved the digitisation of one specific resource. As the digitisation of resources has grown, some organisations have established strategies and criteria for the selection of material to digitise, while others continue to digitise according to market need and user feedback.

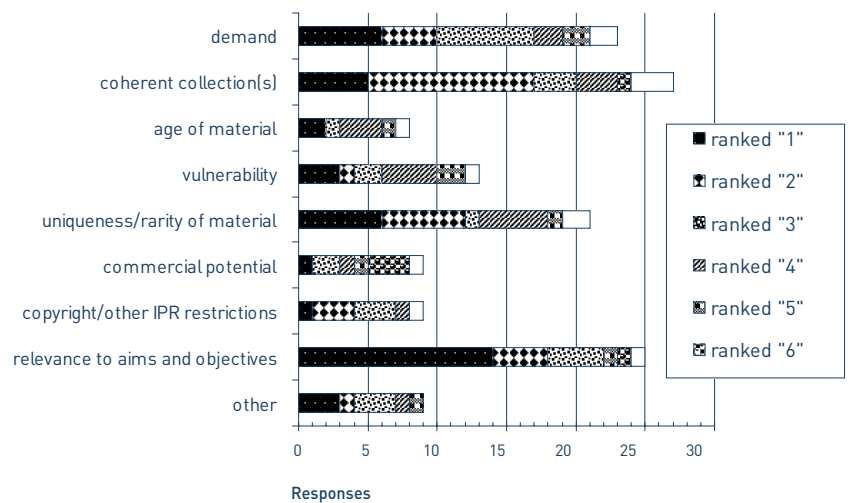
Selection criteria suggested by interviewees included user demand, specific collections requested from the library or academic community, or those collections to which access is requested more frequently than others and would therefore benefit from being in digital format.



The survey included a question on selection criteria for digitisation. All but one of the thirty-four digitisers responded to this question. Multiple responses were possible. The most frequent response was relevance to aims and objectives of the institution. Uniqueness or rarity was also a frequent response as were demand and coherent collections. It is interesting that it does seem, from the responses, that the majority of respondents were selecting material for digitisation according to good collection management principles rather than responding to the aims and objectives of funding sources (three respondents).

Figure 7

Selection criteria (Ranked¹⁷)



Other selection criteria given by survey respondents included:

- represent collection(s) (3)
- test methodologies (1)
- criteria still under discussion (1)

Three respondents provided answers about the general aims of digitisation rather than listing selection criteria ("support learning and teaching", increase access, raise awareness of collection).

Interviewees gauged demand through surveys and evaluations to determine what the market required, while others commented that particular print collections were thought of as being better served by being in an electronic format:

Sometimes the digitisation is on the basis of a pre-existing microfilm collection, which is well known and widely used but increasingly difficult to use because it's an old technology.

(Publisher)

¹⁷ There white sections represent non-ranked responses because a few submissions selected criteria but did not rank them.



A number of interviewees commented that they were in the planning stages of introducing strategies for the selection of material to digitise:

We're looking at doing it much more systematically on a much bigger scale.

(Publisher)

Others stated selection was done on a project by project, or individual journal basis:

We do spend a lot of time looking at each journal on a journal by journal basis.

(Publisher)

One organisation looks first at what can be made available, talks to the user community, holds focus groups, and looks at general academic trends. Another organisation had established a priority list, and another had established a digitisation approval board where each individual project was required to submit certain information regarding who would fund it, the timescale, IPR issues and how would it be delivered. Once submitted, this was then considered by the committee. Other selection criteria include:

...look at market trends, competition analysis, undergraduate registration, courses given, the number of courses given in the area we want to cover and so on.

(Publisher)

For some projects/organisations, the selection for digitisation material was linked with funding opportunities, cost and resource requirements. For certain material e.g., fragile, rare or unique, it was easier to apply for and be successful in funding applications.

The funding bodies also had varying selection criteria for funding digitisation projects. Some provided funding in responsive mode and responded to each individual application, some were just beginning to introduce strategies, while others had specific strategies for funding in place:

Must enhance resources to scholarship - Must be led by scholars - Must involve more than one institution and more than one institution's material - Results/end result must be available to scholars that wouldn't be any other way - Results/end result must be of benefit to scholars - Audience must be the scholarly community.

(Funding Body)

Clear mechanism for making available material to scholars. Clear business model to manage and disseminate resources. Project must be sustainable. Legal arrangements taken care of e.g., rights to disseminate material, with technical issues addressed.

(Funding Body)

In some cases organisations worked in collaboration to decide what material should be digitised. Collaboration was reported between publishers, libraries, academics and curatorial staff (see Chapter 9).



Interviewees raised a number of issues in relation to the selection of material for digitisation. Some organisations had too much material and found it difficult to prioritise, others found that although a list of criteria had been established, there was still too much material that fits the criteria.

3.2.5 Access to Digitised Material

- Not all of the resources identified through the desk research are fully available to researchers in the UK, or anywhere else for that matter. The following resources are in the process of being developed and may not yet be accessible, or only give access to a project website or a demonstration database:
- ArtSTOR (April 2007) is a Mellon-funded project, that “provides curated collections of art images and associated data for non-commercial and scholarly, non-profit educational use.”¹⁸ JISC is monitoring ArtSTOR’s licence development. While there are no plans to licence this for UK institutions at the moment, JISC is continuing to monitor any proposals.
- British Library Newspapers 1800-1900 (ends September 2006) currently only provides access to a project website.
- The Online Chopin Variorum Edition (OCVE) was “a pilot research project funded by the Andrew W. Mellon Foundation from May 2003 to October 2004.”¹⁹ It is followed by Chopin’s First Editions Online (CFEO), funded by the AHRB (ends February 2007). “By the end of the CEFO project, an archive comprising 4,345 digital images of Chopin’s first editions will be available online without password restriction, prerequisite subscription or payment.”²⁰ We were unable to find a Web presence for this project.
- The project Website of the British Library Sound Archive 20th Century (ends September 2006) offers a few samples of digitised sounds but promises that by 2006 more recordings should be accessible²¹.
- The Newsfilm Online project (ends January 2007) aims “to encode 60,000 items totalling 3,000 hours of ITN Archive content (1955 to date) and Reuters content (1896 to date)”²². Currently, only a “selection of test encodings”²³ can be searched.
- The Online Historical Population Reports Project 1801-1937 (ends April 2007) has a demonstrator²⁴ that is still under construction but is functional.
- The Brunel Archive provides a link to a restricted access demonstrator.

18 Rudenstine, Neil L. *Letter from the chairman and the executive director*. <http://www.artstor.org/info/about/letter.jsp>, 12.04.2004, [accessed 29.11.2004].

19 Bradley, John. *Digitizing Chopin: Chopin’s First Editions Online (CFEO) and the Online Chopin Variorum Edition (OCVE)*, <http://drh2004.ncl.ac.uk/abstract.php?abstract=250>, [n.d.], acc 081104.

20 Bradley, John. *Digitizing Chopin: Chopin’s First Editions Online (CFEO) and the Online Chopin Variorum Edition (OCVE)*, <http://drh2004.ncl.ac.uk/abstract.php?abstract=250>, [n.d.], [accesses 08.11.04].

21 JISC. *The archival sound recordings project*, <http://www.bl.uk/collections/sound-archive/archsoundrec.html>, [n.d.], [accessed 29.11.2004].

22 JISC. *British Universities Film and Video Council/ ITN and Pathe*, http://www.jisc.ac.uk/index.cfm?name=project_bufvc, 30.06.2004, [accessed 29.11.2004].

23 *Search Newsfilm Online*, http://temp5.bufvc.ac.uk/newsfilmonline/public_html/dbindex.php, [n.d.], [accessed 29.11.2004].

24 *Advanced search*, <http://www.histpop.org/ohpr/servlet/Show?page=Search>, 2004, [accessed 29.11.2004].



- In September 2004, an extensive unnamed ARL/GPO digitisation initiative for American Government publications was in the selection stage.

While commercial companies in general charge for access to their material, libraries tend to allow free access to material. There are three main charging models:

- Payment of a lump sum for general access (subscription),
- Payment on a usage basis (pay per view, or pay per download)
- Paying to own content (outright purchase).

Publishers often offer different models for the same content. They may, at the same time, reserve particular payment modes for particular types of material. For example, journals are in general offered on a subscription basis, whereas large bodies of textual material might be offered for outright purchase. There are exceptions to charging for access to content, for example when public funding is given or when

Societies themselves also pay for some journals to be digitised, and have asked that we make them feely available alongside any current subscription to the journal.

(Publisher)

Commercial companies in many cases see libraries as their main customers and the publishers interviewed for this study said that they regard it as important to respond to customer feedback, or even involve them developing access models.

We're just saying to the libraries [...] we're giving you an opportunity to work with us, and let's look at the usage and try to map that in to what you're buying, and then look at what you're not buying and what you're using

(Publisher)

As many other publishers we used to be absolutely process orientated and we have good links with authors and editors, good links with the societies that we publish for. But no notion of librarians. [...] We are now in a situation where we sell directly to customers[...] and we are learning customer service, [...] learning marketing and listening.

(Publisher)

Library interviewees generally felt that their role was to provide free access to their resources. However, they struggle to apply this rule to digital material due to its costs, both in creation and maintenance.

We do not and we would find that difficult to justify. We are a legal deposit library. We do not charge for access but charge for reproduction services and could think of charging for downloading. We would not rule out charging for services.

(Library)

There are some that think it's bad to charge, but it allows us to reinvest the money into the project and provide more functionality....

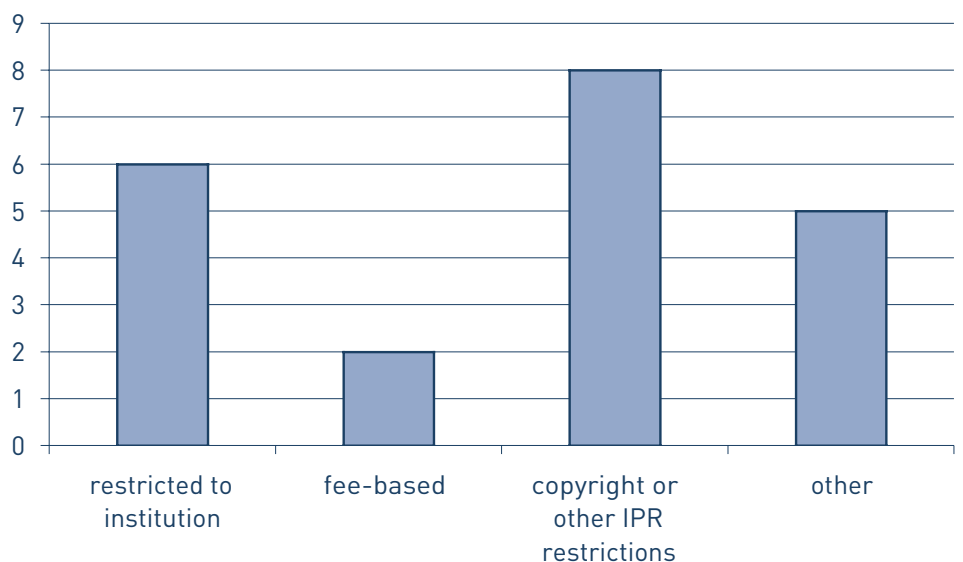
(Archive)

Survey respondents were asked about the accessibility of their digitised material. There were also questions on the existence of descriptive metadata for discovery purposes and access restrictions. Thirty-two out of thirty-four digitisers replied to a question on how freely accessible their resources are. Twenty-one responded that they provide access for free and eleven provide fee-based access. Additionally, six respondents selected both methods.

Figure 8

Why are resources not freely available?

Responses



When asked about restrictions on access, all twenty-seven respondents who had previously indicated that access was not free responded. Multiple answers were possible. Respondents indicated that copyright is the most frequent hindrance to public access. Other responses included:

- Projects that aren't completed yet, hence inaccessible but will be public in future (2)
- Externally funded resources are made freely available but internally funded resources are considered as "institutional assets" to which access is restricted or resold (1)
- "No formal delivery mechanism, all funded projects are freely available" (1)
- "Not yet decided how to make it available, for some material it may just be available within the University, for other material we have to investigate copyright and determine the method of making it available." (1)



The interviews revealed some examples of libraries and archives trying out charging models for access. For example, the National Archives of Scotland (NAS) allow free viewing of their digitised version of wills, but charge for downloads. This model is also applied by the National Library of Wales (NLW) and the Wellcome Trust to some of their material. This model is based on the charging model for reproduction services.

You can still search and look for free, but to download you have to pay for it, so it's a replication of our reproduction services.

(Archive)

The benefit of charging is seen as the potential for covering maintenance cost and further development of the project.

However, more attention is being paid on securing long-term access to material. One way of doing this is for the funding bodies to make it a condition of their funding agreements.

We have said publicly that we are changing our grant conditions so if the future if you come to us and say you want to do research in this genome and it's going to cost £5 million or whatever, after all the administrative stuff we say here's the money, as a condition of grant, you will be required to deposit a final peer-review copy of your work in PubMedCentral. So this project is related to that because we're trying to encourage open access and we're tackling it from both ends, we want the current stuff which we're funding particularly, to be available, but we also recognise we want the archive to be available.

(Funding body)

This is also true for some of the digitisation projects funded by JISC, which will be available on an open access basis. One funding body also encourages open access, funding both publishers and the academic community in the interests of furthering research.

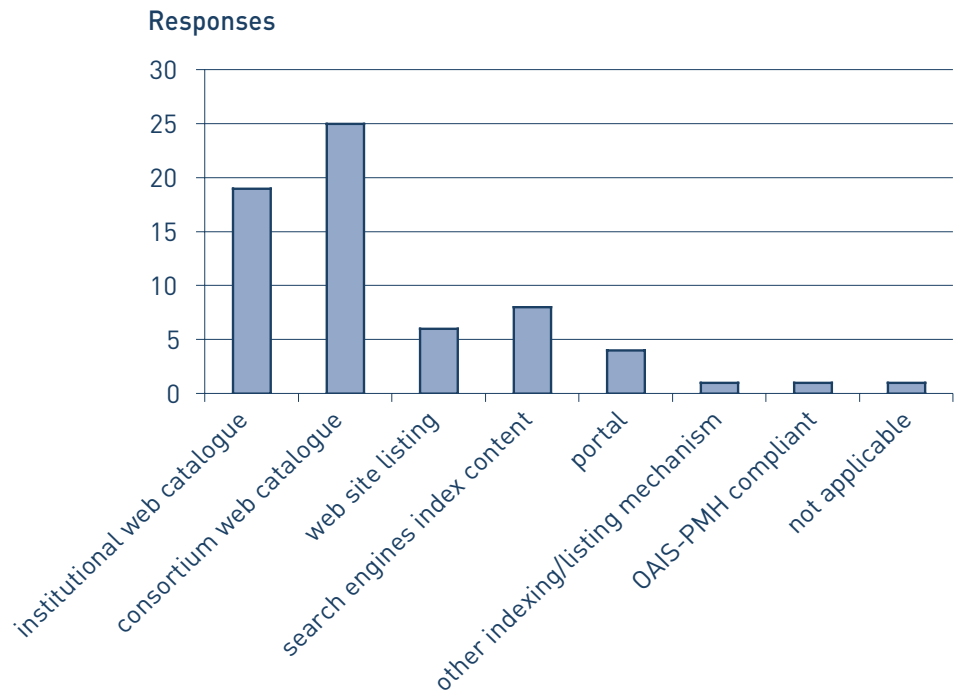
So this project is related to that because we're trying to encourage open access and we're tackling it from both ends, we want the current stuff which we're funding particularly, to be available, but we also recognise we want the archive to be available, and I think it is only a token gesture but we believe that this should be available and I suppose it's our attempt to say well let's not leave it entirely to the private sector to digitise and charge us back for it

(Funding body).



Figure 9

Access to “published” collections



There were thirty-five survey responses to a question on how resources available to external users, whether for free or for a fee, are made accessible. Web site listings and institutional catalogues were the predominant finding aids. One respondent said that they make resources available through the project website. Only one has made its resources OAIS-PMH compliant.

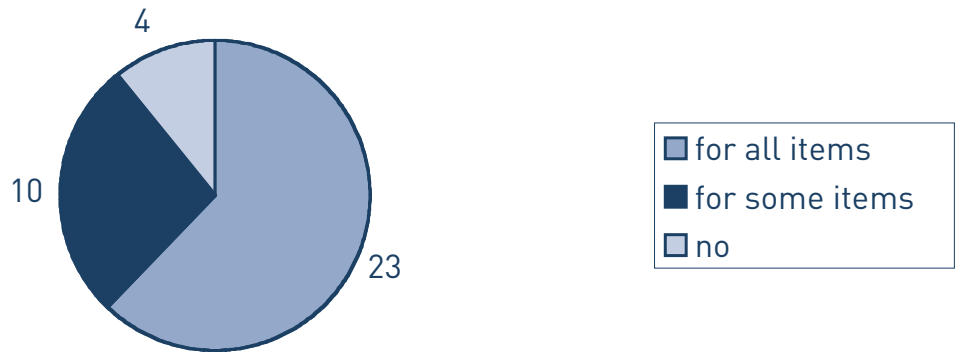
All thirty-four digitisers (as well as three non-or not-yet digitisers) answered a question on metadata. Roughly, two thirds indicated that metadata was created for all digitised items. Comments here included that metadata creation depended on the project, or was restricted to manuscript material. In one instance, there were backlogs, but eventually all items should have metadata records. One institution that created metadata for all items indicated that metadata creation was “very time-consuming”. The AMeGA (Automatic Metadata Generation Applications) project has focused on overcoming this problem²⁵.

²⁵ Greenberg, J., K. Spurgin & A. Crystal. Final report for the AMeGA [Automatic Metadata Generation Applications] project, 2005.



Figure 10

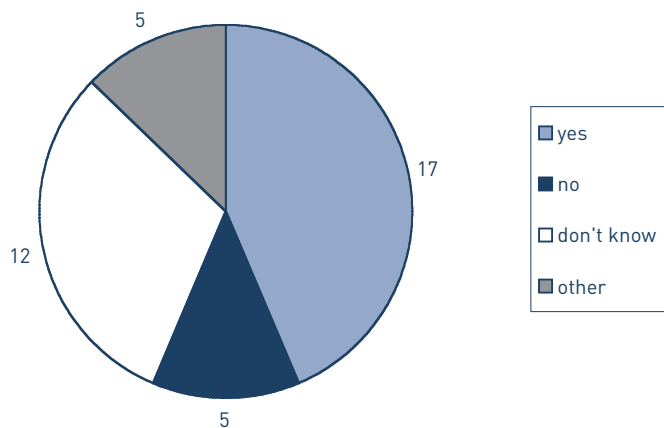
Existence of metadata records



Finally, respondents were asked if their resources are designed to be accessible to all users.

Figure 11

Are the resources accessible to users with special needs?



This question was intended for digitisers with published resources and for institutions in the advanced planning stage of digitisation. Thirty-seven respondents answered this question, including all digitisers. Only around a third of the respondents confirmed that resources were accessible to users with special needs.

Respondents explained that it depended on the collection. For example: legacy resources often do not conform to W3C guidelines. It was also pointed out that accessibility was an “emerging area, especially in geo-spatial content and images”. One institution focussed on visual impairment, while another has included increasing accessibility in the digitisation strategy that is being developed. Finally, one respondent explained that they use assistive software such as JAWS, Supernova and Kurzweil.



3.2.6 Management and Preservation of Digitised Material

Interviewees thought that, in general, collection management is the responsibility of the organisation/institution that hosts the digitised material. Some funding agreements specify that long-term management of the digitised collection/resource should be planned for, while others do not require or ask for collection management information. Support services (see Chapter 7) offer assistance with planning collection management. Some support services provide case studies of digitisation projects to aid others in the planning of and management of projects. Interviewees found such information useful.

However, long-term management of the collections was raised as an issue by those involved in digitisation projects, in particular the cost of long-term management and preservation of the collections/resources. Some interviewees felt neither they nor others had addressed these issues and that guidance was required in these areas.

We are looking at external archiving solutions where perhaps [name removed] are willing to maintain material simply on the basis that it should be maintained somewhere.

(Publisher)

Interviewees felt that good project management is a vital component of all digitisation projects, and planning project management should be incorporated into the initial stages. Many respondents discussed the difficulty of successful project management due to the different roles and factors involved in any digitisation project.

Another issue raised was the need to add value to digitised resources. In the past, many projects only involved digitisation. However, many stressed the need for resources to have added functionality appropriate to the user group.

The Association of Research Libraries has recently announced its endorsement of the production of digital surrogates as a method of preserving non-digital material. While ARL points out the advantages of digitisation over of methods of producing surrogates, such as photocopies or microforms, and describes the progress made in digital preservation, it is clear that there is still a lot of work to be done before the preservation of born digital and digitised material will be assured.

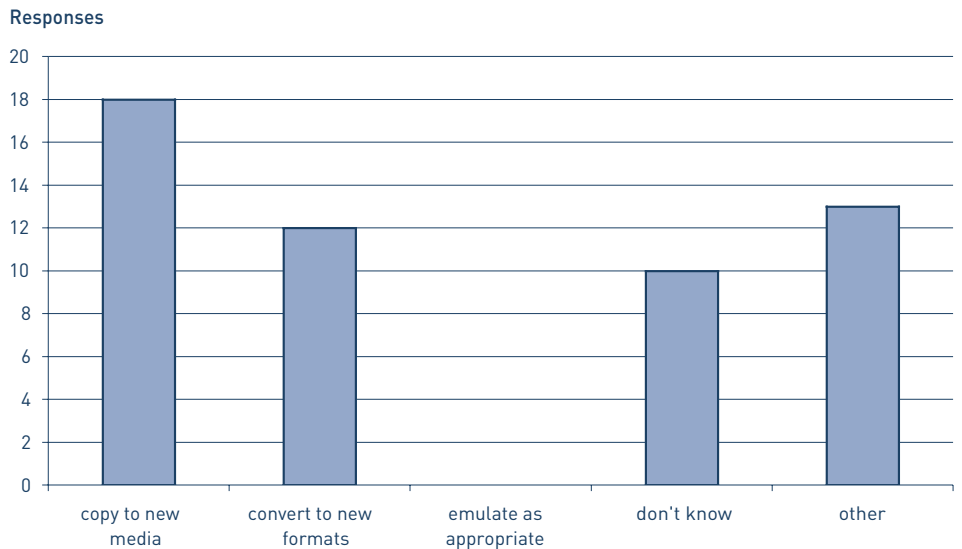
Digital preservation requires both technical strategies and supporting infrastructure. Technical strategies include migration and emulation. Simple strategies include “refreshing” information and media migration to combat deterioration and obsolescence in storage media respectively. Conversion strategies to combat software obsolescence may rely on backward compatibility of new application software or interoperability of different software. Equally, it may involve more complex conversion processes. Digitisers can influence the “preservability” of the resources they create through the standards they follow (see Chapter 5). While the use of standard formats may simplify the migration



task, migration is still likely to be required because even standard formats change over time. For more complex digitised resources, emulation may be required. The aim of emulation is to retain the look, feel and functionality of digital information through the use of software that allows new technological platforms to mimic the behaviour of older technology platforms.

Figure 12

Preservation measures



Survey respondents were asked which formats they were using to digitise material (see Chapter 5). They were also asked which technical strategies they planned to use. This question was intended for digitisers or institutions in the advanced planning stage of digitisation. Thirty-eight respondents answered this question, including all digitisers. Multiple responses were possible.

Most respondents are willing to refresh media, which is a short-term preservation measure. No respondent chose to emulate obsolete technology.

One respondent has a system in place, with a storage area network (SAN), daily back-up procedures, off-line and near-line archiving.

Currently some institutions are planning a change of storage methods:

- from CD to a SAN and local digital repository
- from bit-stream maintenance by Computer Services to local digital repository
- from tapes in different locations to new media



Another institution is investigating the use of LOCKSS²⁶ software and of storage resource brokering software (SRB) “for distributed replication”. Four institutions have yet to decide on preservation measures. (“Strategy for digital object management is currently being investigated in wider institutional context and long term management/preservation procedures depend on the outcome.”) One institution devolves preservation to the ADS, which has implemented an “OAIS-based preservation programme”. Finally, three respondents do not envisage long-term preservation for their digital resources, which are “ephemeral”, digitised exam papers “intended for a cohort of students” or considered as “access rather than preservation copies”.

²⁶ “LOCKSS is open source, peer-to-peer software that functions as a persistent access preservation system. Information is delivered via the web, and stored using a sophisticated but easy to use caching system.” <http://lockss.stanford.edu/>, [accessed 14.02.2005].

4 Current and Future Needs of Researchers and Users of Digitised Material

The desk research revealed that little has been written on the current and future needs of researchers for digitised material. What has been written tends to be library surveys of general information needs or information seeking behaviour of their user communities. The most relevant work found was Researchers' Use of Libraries and other Information Sources: current patterns and future trends²⁷ report, commissioned by the Research Support Libraries Programme (RSLP) in 2001. This section therefore summarises the main findings of that study. The findings of the RSLP study are supplemented by comments from representatives of the user community who were interviewed. Unfortunately, it is difficult to make more than general comments without carrying out a substantial survey of the research community. (The British Academy has commissioned a survey²⁸, the results of which will be published in late spring 2005. It focuses on the humanities and social sciences. The project team requested a pre-publication preview of the report, but the British Academy was unable to provide this.)

4.1 Research Support Libraries Programme Study

The research disciplines studied in the RSLP work were grouped into five domains. These have been adopted throughout this chapter:

- Biological & medical sciences
- Physical sciences & engineering
- Social sciences
- Area studies & language
- Arts & humanities

The majority of respondents, independent of discipline, considered books and printed (refereed) journals to be essential. Other findings were that:

²⁷ Education for Change Ltd et al. *Researchers' use of libraries and other information sources: current patterns and future trends: final report*, <http://www.rslg.ac.uk/research/libuse/LUrep1.pdf>, 2002, [accessed 14.11.2004].

²⁸ *Policy study: research and information e-resources for the humanities and social sciences*. <http://www.britac.ac.uk/reports/eresources/questionnaire.html>, [2004?], [accessed 15.12.2004].



- Biological & medical research relies heavily on e-journals and active full text databases, whereas researchers in Area studies & languages or in arts & humanities prefer physical access, also because they value the “serendipitous benefits of browsing”²⁹ more highly than the “pure scientists” do.
- It appears that, depending on their field of study, researchers search for information differently: “pure scientists” prefer focused searches, whereas researchers in the arts & humanities and in the social sciences appreciate browsing.

“[N]on-conventional research resources such as moving images, broadcast materials and maps”³⁰ are little used. Generally, it was found that “national museums and archive services had a very low profile amongst all researchers, even in arts & humanities”³¹. The study recommended that relevant resources be “included in national on-line catalogues”³².

The reduced appeal of online access in arts & humanities or area studies & language is possibly explained by the lack of availability of relevant journals³³ since “[humanities researchers] are very interested in increased availability of e.g. electronic full texts of manuscripts and primary documents”³⁴.

4.2 Interviewee Comments

According to the interviewees, researchers value the enhanced functionality of digitised materials, although in different ways. While appreciating dictionaries, databases and digitised manuscripts and inscriptions, researchers in the humanities value advanced text-searching capabilities (context and/or frequency of a term) most. Sciences are more attracted by the facilitated inclusion of external data in their studies and models.

As far as image material is concerned, interviewees thought that the arts and humanities are better covered than the social sciences, exact sciences and technology. In overall provision of digitised material, however, the gaps are larger in the arts and humanities. It is not clear what this means, since other studies and the results of the survey for this study suggest that a lot of digitisation has been done in this area. However, it may mean that there is a lot more material relevant to arts and humanities, so what has been done presents a small proportion of what could be done. Interviewees thought that, generally, coverage varies *within* fields. For instance, in medical humanities and

²⁹ Education for Change Ltd et al. *Researchers’ use of libraries and other information sources: current patterns and future trends: final report*, <http://www.rslg.ac.uk/research/libuse/LUrep1.pdf>, 2002, [accessed 14.11.2004]., p. 26.

³⁰ Education for Change Ltd et al. *Researchers’ Use of Libraries and other Information Sources: current patterns and future trends: final report*, 2002, p.11.

³¹ Education for Change Ltd et al. *Researchers’ Use of Libraries and other Information Sources: current patterns and future trends: final report*, 2002, p.11

³² Education for Change Ltd et al. *Researchers’ Use of Libraries and other Information Sources: current patterns and future trends: final report*, 2002, p.45.

³³ Education for Change Ltd et al. *Researchers’ Use of Libraries and other Information Sources: current patterns and future trends: final report*, 2002, p. 6.

³⁴ Education for Change Ltd et al. *Researchers’ Use of Libraries and other Information Sources: current patterns and future trends: final report*, 2002, p.38.



biomedical science, “all the obvious things are probably digitised” and mainly items of reduced commercial value remain to be digitised, whereas there is a lot of information still needs to be digitised in the field of chemistry.

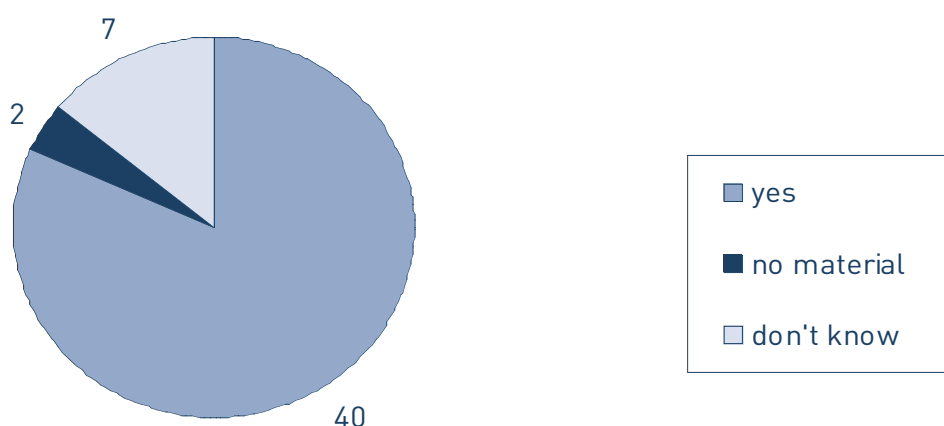
Different disciplines adopt digitised materials at different speeds: physics researchers adopted digitised materials earlier than those in biological sciences, while researchers in the arts and humanities still need to become familiar with the “hybrid” approach of using digitised and non-digitised materials alike for their research. These findings largely reflect those of the RSLP study.

5 Future Digitisation Plans

Survey respondents were asked about their future digitisation plans. This question was intended for all respondents. One respondent did not answer this question, but a second response from the same institution did.

Figure 13

More digitisable holdings?



A large majority (41) of institutions have holdings that ought to be digitised in their opinion. Three of the six "non-digitisers" that do not plan to digitise in future hold collections that could be converted.

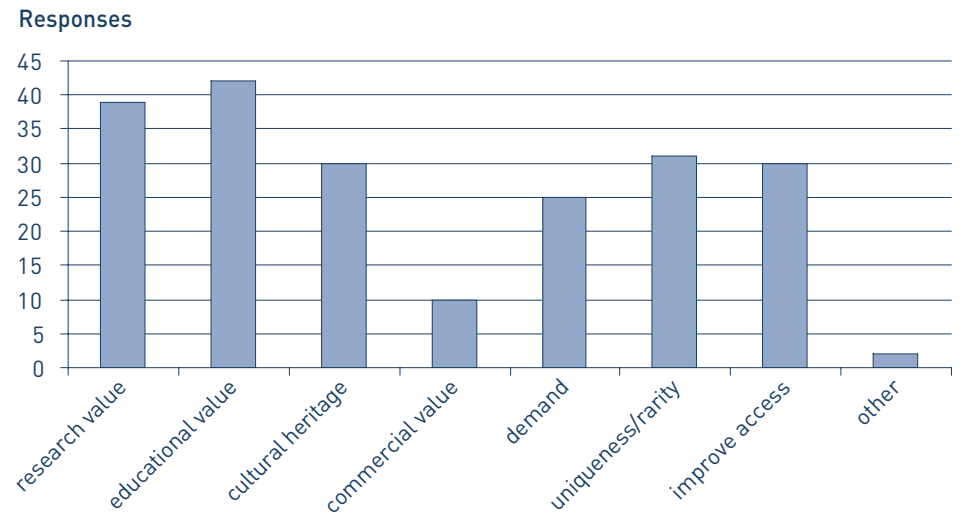
5.1 Reasons for Digitising This Material

Respondents were asked whether they planned to digitise the material they had listed. Twenty-six (63%) stated that there were plans to digitise while fifteen respondents (37%) did not know.



Figure 14

Reasons for digitising mentioned collections



When asked why they thought this material should be digitised forty-three respondents replied. These replies included respondents who did not plan to digitise the material themselves. Multiple responses were possible. Value for teaching and research were predominant reasons for digitising remaining collections, followed by uniqueness/rarity, cultural heritage and access considerations. This is different from the responses given to an earlier question on reasons for digitising material. There, increasing access and reducing handling were the main objectives of digitisation activities.

Both “other” comments pointed to digitising to create “preservation surrogates” that support “preservation of heavily used and delicate material”. On commercial value, one respondent commented that “Some have commercial value but I think this is overplayed - especially b[y] research universities/ Russell G[rou]p/larger public libraries/archives and others.”

5.2 Priorities for Digitisation

Interviewees commented that some content providers created digitisation strategies/programmes or lists of collections/items that could be digitised. Other big institutions know that they have many collections of interest and hence define priority areas, but have no detailed lists. This point is reflected in the findings of the questionnaire survey, in that most respondents were not able to provide detailed lists.

Digitisation may be delayed by cataloguing issues: finding aids to the collections may need to be digitised prior to digitising primary material from these collections and whether digitisation should wait until cataloguing is complete is a moot point.

One respondent stated:



...by the time we have done all the censuses, excluding 1841 which will be done working with partners, by the end of 2005, we will have met about 80% of our user requirements, because a small amount of stuff satisfies a lot of people. [T]here is still stuff missing, but we have a programme.

(Archive)

When asked about priorities, a funding body employee asked in return:

What material exists that wouldn't benefit the discipline

and found that:

No, I can't think of any that would not be useful if they were available in digital form, as much as possible"

While this attitude does not facilitate selection, it shows that delivery in digital format is not the exception but has become the rule.

6 Standards, Formats, Guidelines and Existing Policies

6.1 Introduction

This section reviews current digitisation standards and guidelines and summarises existing digitisation policies.

6.2 General considerations

6.2.1 File size and compression

From the literature, good practice appears to be that “Your design goal should be to hold master versions of all your data in forms that can be converted to meet varying purposes.”³⁵ The master file created from the original item should capture as much of the information content of the item as possible. This approach is likely to result in large file sizes, with implications for the amount of storage space required. The master files will also require more processing power for online viewing. To save storage space and accelerate downloads, files can be compressed. Lossless compression is recommended for the storage of master files³⁶.

6.2.2 Software matters: proprietary/non-proprietary, closed/open source

“Proprietary” software is a commercial product and is therefore subject to (often costly) use licences. These invariably prohibit modification and redistribution of the software without express permission. The source code is not disclosed to users, hence the application cannot be adapted to individual systems. “Non-proprietary” software can be copied, edited and distributed more freely. “Closed” software gives the user no control over the application; most proprietary software is issued under “closed” licences. “Open” software is open to modification. However, while all “non-proprietary” software is “open”, not all “proprietary” software is “closed”, as the copyright owner can publish the

³⁵ AHDS. *Introduction to creating digital resources*. <http://www.ahds.ac.uk/creating/information-papers/creating-introduction/index.htm>, 11.12.2003, [accessed 21.12.2004].

³⁶ Hughes, Lorna M. *Digitizing collections: strategic issues for the information manager*, 2004, p. 188.



source code and issue licenses that allow copying, tweaking and redistribution. For instance, the PDF specification is freely available on condition that the new application includes specific access control mechanisms³⁷.

For digitisation projects, these notions are important because closed proprietary systems create a dependency on the system provider, be it for increasing functionality or fixing bugs. Moreover, if the provider goes out of business or ceases to support the system, the user is left with a legacy system that cannot be adapted, since the code is unknown. However, some closed proprietary systems are de facto standards for certain applications, e.g. PDF allows online viewing, downloading and printing of text documents while controlling/prohibiting modification. The use of open systems avoids any dependency but requires programming skills.

BL's Turning the Pages software from Armadillo Systems is an example of a custom-developed proprietary application that probably will not become a standard but rather serves the niche market for delivery of high-resolution images of manuscripts together with written and spoken commentaries.

6.3 Formats and Standards

6.3.1 Image formats

TIFF (Tagged Image File Format) is currently the recommended standard for archival master image files. These files are large, hence unfit for quick loading over the Internet. For quick loading, there are many different formats with different compression algorithms and colour-depth. The most common are:

- The JPEG (Joint Photographic Experts Group) format involves lossy compression but produces a high enough resolution for scanned photographs. The newer JPEG 2000 format offers lossless compression³⁸.
- GIF (Graphic Interchange Format) uses lossless compression and is the de facto standard for "cartoons, icons and similar graphic images"³⁹. It is a proprietary format that allows for 256 colours⁴⁰.
- Portable Network Graphics (PNG) format uses 24-bit encoding, hence it offers greater colour-depth than GIF, along with lossless compression⁴¹. It might replace GIF on the web although take-up is slower than expected⁴².
- PDF (Portable Document Format) can be accessed using Adobe's free Reader software. "A PDF file can describe documents containing any combination of text, graphics, and images in a device independent and resolution independent format."⁴³

³⁷ Berglund, Ylva, Alan Morrison, Rowan Wilson & Martin Wynne. *An investigation into free ebooks: final report*. <http://ahds.ac.uk/litlangling/ebooks/report/FreeEbooks.html#ebooks-div-id2669731>, March 2004, [accessed 21.12.2004].

³⁸ Graphics file formats, http://en.wikipedia.org/wiki/Graphics_file_formats, 17.11.2004, [accessed 17.11.2004].

³⁹ Hughes, Lorna M. *Digitizing collections: strategic issues for the information manager*, 2004, p. 190.

⁴⁰ GIF. <http://en.wikipedia.org/wiki/GIF>, 03.12.2004, [accessed 10.12.2004].

⁴¹ Graphics file formats, http://en.wikipedia.org/wiki/Graphics_file_formats, 17.11.2004, [accessed 17.11.2004].

⁴² TASI. *Why Should I use a PNG file?* <http://www.tasi.ac.uk/advice/creating/png.html>, [n.d.], [accessed 15.12.2004].

⁴³ Portable Document Format, http://en.wikipedia.org/wiki/Portable_Document_Format, 01.12.2004, [accessed 03.12.2004].



Formats to watch: PNG

6.3.2 Audio formats

Digitised sounds can be delivered in two ways: by simple download, where the user can only listen to the document once the download is completed, or by data streaming, where the user can start to listen as soon as the streaming has started. The latter method is only available for certain formats and demands a high bandwidth connection⁴⁴.

Audio formats include:

- AAC (Advanced Audio Coding) offers improved lossy compression so that it might replace MP3 in the future⁴⁵. It can be used for audio streaming.
- AC3 (5.1 audio) a lossy compression system developed by Dolby Laboratories.
- AIFF (Audio Interchange File Format) is an uncompressed format that is mostly used by Apple Macintosh Computers.
- MP3 is a lossy compression technique and is one of the MPEG multimedia standards.
- Real Audio can be played on the freely downloadable player software⁴⁶. It allows streaming.
- WAV (WAVEform audio format) is an uncompressed format. It is a Windows standard.
- WMA (Windows Media Audio) is a lossy format developed by Microsoft and can be played using Windows Media Player, Winamp and other media players.

Formats to watch: AAC

6.3.3 Digital video standards

AVI (Audio Video Interleave) predominates among audio/video formats available for PCs. Others are:

- DivX, a video codec (Compression and DE-Compression tool)
- MPEG (Motion Pictures Experts Group) files can contain sound and video. There are several standards, the oldest being MPEG-1, while MPEG-2 is used for DVDs, and MPEG-4 is emerging as suitable for streamed data and mobile phone video⁴⁷.
- Apple Quicktime supports many standards and CODECS.
- The Real Video proprietary format can be played on the free player

⁴⁴ McHugh, Andrew. *Audio resources and the cultural heritage*. <http://www.hatii.arts.gla.ac.uk/courses/chcmaterials/DigitalSoundCultHeritage.pdf>, [n.d.], [accessed 21.12.2004].

⁴⁵ *Advanced Audio Coding*. http://en.wikipedia.org/wiki/Advanced_Audio_Coding, 17.11.2004, [accessed 10.12.2004].

⁴⁶ Hughes, Lorna M. *Digitizing collections: strategic issues for the information manager*, 2004, p. 192.

⁴⁷ Readers should not that the licensing situation relating to MPEG-4 is complicated.



Formats to watch: DivX⁴⁸

6.3.4 Resource identifiers

If the material being digitised has been formally published in non-digital form, it may have been assigned an identifier, such as:

- ISBN (International Standard Book Number) and ISSN (International Standard Serial Number) are unique identifiers for books and periodicals. They apply to titles or works rather than to articles or chapters within works
- SICI/BICI (Serial Item and Contribution Identifier/Book Item and Component Identifier) allow description at article-level and lower⁴⁹.

Various identifiers could be used for digital material:

- A URL (Uniform Resource Locator) points to the location of a file instead of to the file itself. If the file is moved, the location has to be updated on every website that contains a link to the resource or else the link is “broken”.
- A PURL (Persistent Uniform Resource Locator) points to a resolver, which redirects the query to the actual location of the resource. Compared to URLs, updating is much simplified since only the resolver database needs to be updated. PURLs were originally developed as a provisional system to be used until the URN framework is functional⁵⁰.
- A URN (Uniform Resource Name) “is a standard, persistent and unique identifier for digital resources on the Internet”⁵¹. It contains a Namespace Identifier (NID) code and a Namespace Specific String (NSS). The former designates the identification system being used for the URN and assists the interpretation of the NSS, the local code used to identify the individual document. ISBNs and ISSNs can be used as NIDs⁵².
- The DOI (Digital Object Identifier) is an application of the URN concept. It uses the Handle system, where persistent identifiers are resolved through a global service, which manages the location database⁵³.

6.4 Metadata

Metadata is generally considered to fall into three categories.

- Descriptive metadata identifies a digital object and is used for resource discovery. This would include traditional “cataloguing” data
- Structural metadata describes the internal organisation of the digital object so that the assembled files can function like the original⁵⁴.

⁴⁸ Hughes, Lorna M. *Digitizing collections: strategic issues for the information manager*, 2004, pp. 192-3.

⁴⁹ Green, Brian & Mark Bide. *Unique Identifiers: a brief introduction*, <http://www.bic.org.uk/uniqueid.html>, March 1997, [accessed 03.12.2004].

⁵⁰ PADI. *Persistent identifiers*, <http://www.nla.gov.au/padi/topics/36.html>, Aug 2002, [accessed 03.12.2004].

⁵¹ PADI. *Persistent identifiers*, <http://www.nla.gov.au/padi/topics/36.html>, Aug 2002, [accessed 03.12.2004].

⁵² PADI. *Persistent identifiers*, <http://www.nla.gov.au/padi/topics/36.html>, Aug 2002, [accessed 03.12.2004].

⁵³ PADI. *Persistent identifiers*, <http://www.nla.gov.au/padi/topics/36.html>, Aug 2002, [accessed 03.12.2004].

⁵⁴ Deegan, Marilyn & Simon Tanner. *Digital futures: strategies for the information age*, 2002, p. 116.



- Administrative metadata encodes information needed for resource management and preservation, such as capture parameters, file format and copyright status⁵⁵.

However, the boundaries between these categories are not clear-cut, for instance, structural metadata can be of assistance to long-term preservation management and descriptive metadata, e.g. publisher information, can aid administrative tasks⁵⁶.

In the digital library sector, there are many locally developed metadata sets and schemas, most of which are based on the following:

6.4.1 Element sets

- “MARC (MACHINE-Readable Cataloguing) is a format standard for the storage and exchange of bibliographic records and related information in machine-readable form. All MARC Standards conform to ISO 2709:1996 Information and documentation -- Format for Information Exchange.”⁵⁷
- Dublin Core Metadata Element Set (DCMES): “a generic set of 15 elements applicable to a variety of digital object types”⁵⁸, with “a defined set of rules governing its content”⁵⁹. This was originally developed to facilitate interoperability.
- NISO technical metadata for digital still images (Z39.87) has been developed specifically for image files created by digitisation.

Work is ongoing to develop preservation metadata. Early work by the National Library of Australia, the NEDLIB project and the CEDARS project was synthesised by the Research Libraries Group and OCLC. OCLC and RLG produced a preservation metadata framework⁶⁰. The PREMIS (PREservation Metadata: Implementation Strategies) working group is exploring how this framework can be implemented.

6.4.2 Schemas

- The Library of Congress developed MODS (Metadata Object Description Schema) which uses XML and can be populated using certain MARC21 fields⁶¹.

⁵⁵ Hughes, Lorna M. *Digitizing collections: strategic issues for the information manager*, 2004, p. 198.

⁵⁶ Muir, Adrienne et al. *Report on developments world-wide on national information policy*, http://www.la-hq.org.uk/directory/prof_issues/nip/index.html, Feb 2002, [accessed 03.12.2004].

⁵⁷ *Exchange formats*. <http://www.bl.uk/services/bibliographic/exchange.html>, [n.d.], [accessed 21.12.2004].

⁵⁸ Hughes, Lorna M. *Digitizing collections: strategic issues for the information manager*, 2004, p. 197.

⁵⁹ Morrison, Alan, Popham, Michael & Wikander, Karen. *Creating and documenting electronic texts*, <http://ota.ahds.ac.uk/documents/creating/chap4.html>, [n.d.], [accessed 19.11.2004].

⁶⁰ The OCLC/RLG Working Group on Preservation Metadata. *Preservation metadata and the OAIS information model: a metadata framework to support the preservation of digital objects*. http://www.oclc.org/research/projects/pmwg/pm_framework.pdf, June 2002, [accessed 21.12.2004].

⁶¹ The Library of Congress. *MODS metadata object description schema: official web site*, <http://www.loc.gov/standards/mods/>, 29.10.2004, [accessed 23.11.2004].



- The Text Encoding Initiative (TEI) developed metadata to encode electronic text files from the humanities. The TEI Header can be used if only descriptive metadata is needed. However, it only “has a set of guidelines, which allow for widely divergent approaches to header creation.”⁶²
- The Encoded Archival Description (EAD) is a descriptive scheme that uses SGML (Standard Generalized Markup Language) and XML (eXtensible Markup Language).⁶³
- METS (Metadata and Encoding Transmission Standard) encodes descriptive, structural and administrative metadata using XML (eXtensible Markup Language) and “is intended to fulfil the roles of Submission Information Package, Archival Information Package and Dissemination Information Package within the Open Archival Information System Reference Model”⁶⁴. METS can be used as a “wrapper” to bring together metadata from different sources (e.g. MARC descriptive metadata and Z39.876 technical metadata).

In the UK, the Arts and Humanities Data Service collections use different metadata schemas, including: METS, DC, Content Management Framework, Data Documentation Initiative and TEI. These can be searched using the Z39.50 or OAI-PMH⁶⁵ protocols. DSpace@Cambridge requires depositors to use Dublin Core and supports OAI-PMH “as a data provider”⁶⁶.

6.4.3 Access and the interoperability issue

NISO’s Z39.50 standard “is a network protocol which allows searching of (usually remote) heterogeneous databases and retrieval of data, via one user interface.”⁶⁷. The OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting) enables metadata searches for the maintenance of the database of a digital collection. There are also initiatives to use OAI-PMH for Internet resource discovery⁶⁸. However, there remain a few metadata-encoding issues to be solved⁶⁹. The preferred encoding is DC in XML⁷⁰. W3C’s RDF (Resource Discovery Framework) aims to offer interoperability between different metadata schemas on the Internet⁷¹.

Furthermore, there are various crosswalks, i.e. mappings between the elements of the various metadata schemes, and UKOLN maintains a collection of crosswalks at <http://www.ukoln.ac.uk/metadata/interoperability/>.

⁶² Morrison, Alan, Popham, Michael & Wikander, Karen. *Creating and documenting electronic texts*, <http://ota.ahds.ac.uk/documents/creating/chap4.html>, [n.d.], [accessed 19.11.2004].

⁶³ Deegan, Marilyn & Simon Tanner. *Digital futures: strategies for the information age*, 2002, p. 127.

⁶⁴ <http://www.niso.org/registration/METSregweb.pdf>, [n.d.], [accessed 03.12.2004].

⁶⁵ AHDS network services. <http://ahds.ac.uk/collections/network-services.htm>, 20.10.2004, [accessed 24.11.2004].

⁶⁶ FAQ, <http://dspace.org/faqs/index.html#standards>, 2003, [accessed 24.11.2004].

⁶⁷ Russell, Rosemary. *What is Z39.50?*, <http://www.ukoln.ac.uk/dlis/z3950/defin.html>, 28.08.1998, [accessed 03.12.2004].

⁶⁸ Campbell, Debbie. *How the use of standards is transforming Australian digital libraries*. <http://www.ariadne.ac.uk/issue41/campbell/intro.html>, 3.11.2004, [accessed 22.11.2004].

⁶⁹ Van de Sompel, Herbert, Michael L. Nelson, Carl Lagoze & Simeon Warner. *Resource harvesting within the OAI-PMH framework*. <http://www.dlib.org/ar/dlib/december04/vandesompel/12vandesompel.html>, December 2004, [accessed 21.12.2004].

⁷⁰ Muir, Adrienne et al. *Report on developments world-wide on national information policy*. http://www.la-hq.org.uk/directory/prof_issues/nip/index.html, Feb 2002, [accessed 03.12.2004].

⁷¹ *Metadata creation*. <http://www.library.cornell.edu/preservation/tutorial/metadata/metadata-02.html>, [n.d.], [accessed 03.12.2004].



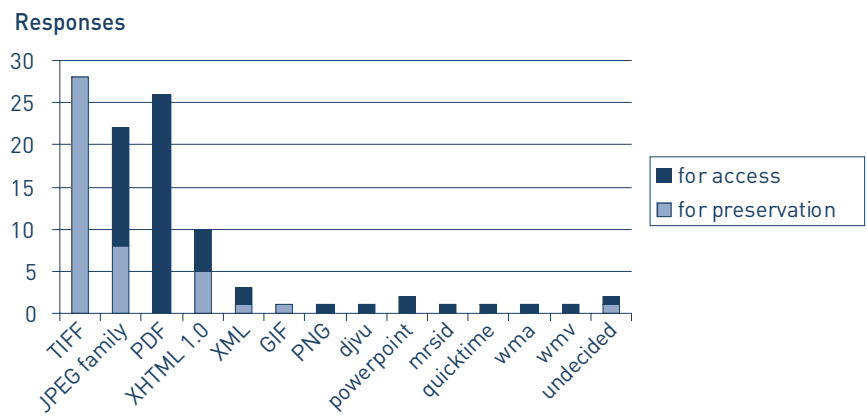
6.5 Formats and Standards Used by UK Libraries and Archives

Thirty-three of the thirty-four digitising respondents indicated which standards they used for digital files. Multiple answers were possible. There appears to be broad consensus about the use of TIFF for master files and the JPG format family and PDF for delivery. XML was used for both preservation and delivery more often than XHTML.

6.5.1 File Formats

Figure 15

Formats used for preservation or delivery



More recent and rarely mentioned formats include the digital negative format DNG, investigated for use as a master file format and DjVu, MrSid and Luna Insight for delivery. It may be noteworthy that PNG and GIF are mentioned by only one respondent. This may illustrate the slow take-up or ignorance of the improved PNG format or just be because no other respondent had any use for either GIF or PNG.

Not all of the digitising organisations interviewed provided details of file formats used. Interviewees stated that the requirements for formats are stability, formats that have been used in the past, formats required by users/funding bodies, and similar formats used in the discipline. A small number of projects used formats that were dictated by partners they worked with (e.g., JSTOR).

Formats used included:

- PDF
- PDF made accessible as a tagged XML
- TIFF images
- TIFF, then convert to PDF, systems are XML based
- HTML and PDF
- Full text SGML DTD for journals



- SGML to XML, rendered as PDF
- SGML headers and references and PDF
- Documents are PDF, images are JPEG

Comments included:

We use Tiff images, Mpeg, JPEG, we have derived images on screen which are easy to download. We use high standards and as open as possible. We also change to suit needs and the time. . For example we moved our video to Mpeg recently and our audio to Mp3 on site. Video is supplied to us at half screen size 30fps from broadcast quality tapes and audio is supplied at CD music standard. MySQL and PHP are used for the web service. We have a fully PRINCE compliant project management system and we follow a normal data back up system with split storage of data. Digital Images start at 20Mb but we have images at many Gb for maps and suchlike. Many users of images require them for many different purposes and we try to be as flexible as possible.
(Digitisation Service)

We're choosing very stable file formats with quite a long shelf life like TIFFs and WAVs. I think there's going to be a lot more problems in the future with other formats.
(Library)

File formats vary according to material digitised and what the project, funding body or support service advise. While a number of interviewees discussed the need for standards in relation to file formats, preservation and interoperability, the majority did not.

6.5.2 Metadata

Twenty-eight out of the thirty-four survey respondents that had digitised indicated the metadata schemes they were using. Multiple answers were possible. Dublin Core was the most frequent response, followed by MARC. However, there are many other schemes in use, which is likely to impact on interoperability. One reply explained that metadata used was “project specific”.

Table 3

Metadata schemes used by survey respondents

Metadata Schema	Number of Respondents
Dublin Core	17
MARC	12
ISAD(G)	3
EAD	3
VRA	2
Simple author/title/date (small resource)	1
SCRAN standard/template	1



Metadata Schema	Number of Respondents
Project specific	1
Own (DC, VRACore, LOMCore compliant)	1
None	1
MODS	1
METS	1
Fact file/directory	1

Interviewees also commented on the metadata schemas used in their projects and some provided more detail on how they were applying these schemas. The data is limited, as not all respondents had detailed knowledge of metadata used in their organisation or for their project. The majority use metadata standards. However, the metadata schemes adopted vary. There is no one scheme or template that is adopted as standard. While the majority of organisations/ projects interviewed manage and produce their own metadata, one used an outside organisation.

Table 4

Metadata schemes used by interviewees

Metadata Formats Adopted	Details
Dublin Core	Template includes title, subject, contributor, keywords, classification, description, publisher, date, type, format, identifier, source, language, relation, coverage, rights management. Used for technical metadata.
Dublin Core and UK LOM	
Four options built on Dublin Core	A full description of the standards for the provider to implement themselves, scripting to allow a mapped output from a providers existing dataset, provided as a database template in Access or Filemaker for filling in, and online provision of data through a web interface.
Dublin Core XML based approach	
DSpace - Dublin Core	DSpace uses a qualified version of the Dublin Core schema based on the Dublin Core Libraries Working Group Application Profile (LAP). A number of qualifiers have been added to suit the needs of DSpace. "DSpace is very open minded towards what metadata set is being supplied as long as it consistent and can be mapped. As long as it complies to extended Dublin Core" (Library).



Metadata Formats Adopted	Details
The Anglo-American cataloguing rules (AACR)	Description of material and the provision of access points for library materials. Includes: title, statement of responsibility, edition, material specific details, publication information, physical description, series, notes, and standard numbers.
MARC record standards	Machine-readable cataloguing record based on AACR.
Encoded Archival Description (EAD) and Encoded Archival Content (EAC)	XML based. EAD used for encoding multilevel finding aids. EAC used for encoding personal and agency histories and is consistent with EAD.
General International Standard of Archival Description - ISAD(G)	Used for archival records. The project used Dublin Core as the basis with ISAD(G) to take Dublin Core to a more detailed level.
CALM Software	Computerized Cataloguing of Archives and Manuscripts. "We use CALM software and are therefore restrained. We're aware of Dublin Core but we use an internal system" (Society).
Consistent naming, workflows, all the big ones, standards and requirements.	"The metadata should be appropriate for the functions you want to carry out...What functionality the system has to produce determines what the metadata has to be like. So that can be anything from Dublin Core onwards" (Digitisation Service).
Metadata Encoding and Transmission Standard. (METS)	The METS schema is a standard for encoding descriptive, administrative, and structural metadata. Includes: METS header, descriptive metadata (e.g., MARC record, EAD finding aid etc.), administrative metadata, file section, structural map, structural links and behaviour. "We use METS for specific projects we're also thinking for the descriptive part of it should be MARC based" (Digitisation Service).
Mix of Dublin Core, SCRAN and others	Depends on the resource and individual project.
Depends on specific resource: Use various thesauri as appropriate, Dublin Core	"We looked at a lot of different thesauri to see which was the most suitable for us. We use various people, places, keywords. We can output data as Dublin Core. we can export data from the Access database and convert it automatically into XML. So we've got a kind of hybrid of standards" (Library).



Metadata Formats Adopted	Details
An open approach that facilitates inter-operability	“I think as long as you have that it does not really matter what sits behind it as long as the interface allows that interaction with other services” (Library).
Created own metadata	Date, title, author, identity, page numbers.

Interviewees from the library community have developed and use MARC formats. Some projects use Dublin Core or extended Dublin Core and felt that this was necessary for interoperability. Others did not (scholarly society publishers) and one project stated that they use any metadata as long as it is consistent with other projects and could be mapped. One mentioned that they used no standards in the past, but now use a hybrid of standards, with data being output as Dublin Core. Other organisations have developed their own metadata and keep metadata consistent in-house, while others use a mix of metadata sets and schemas.

We don't have [hard and fast] rules on what metadata standards should apply.
(Digitisation Service)

We use the metadata that's appropriate for the specific resources/uses. E.g., METS, Dublin Core, MARC, etc.
(Digitisation Service)

6.5.3 Reasons for Adopting Particular Metadata Formats

One organisation interviewed uses expanded Dublin Core to allow for detail, others interviewees stated that metadata should be appropriate for the functions you want to carry out.

What functionality the system has to produce, determines what the metadata has to be like.
(Digitisation Service)

Some organisations interviewed adopt metadata that is either recommended by the funding body, or required by the user community, e.g., libraries. Some said that they feel open URL compliance should be standard and work to that end.

Many stated that in the area of metadata and standards they were on a steep learning curve and one organisation in particular had implemented a metadata working party in order to facilitate work in the area of metadata.

...probably up to now there hasn't been a huge need to standardise metadata supply.
(Scholarly Society)

Dynamism in the field of metadata was also mentioned, making it difficult to decide on one particular standard or scheme.



...we're unlikely in two months time to say we'll stick with this one, but you have to change according to need, and are happy adding new ones on as we need to.

(Society)

While a small number of individual organisations and projects were aware of, and to some extent, involved in work on interoperability, or adopted standards with interoperability in mind, this was very limited, and many projects stressed they did not have the time or funds to become more involved.

We are looking at an open approach that facilitates inter-operability.

(Library)

Although different domains and disciplines have varying needs and requirements there is room for further collaboration between funding bodies and support services in terms of the metadata and file formats and the standards they recommend. This would allow for greater interoperability and harvesting in the future.

6.5.4 Metadata Issues

A number of interviewees stressed the need for further guidelines, specifically a set of guidelines about how to apply metadata. Some seemed unsure about what metadata is required and what different schemas and sets exist. Others suggested the creation of a list of metadata used by projects to determine whether or not a metadata consensus is building.

You can develop a standard but then everyone changes it according to need – so having a metadata standard is one thing but how you apply that is another matter.

(Support Service)

From our findings we can tentatively suggest some trends in that the library-based projects are mostly using some form of Dublin Core or MARC and using XML and METS encoding. Archives use the EAD and ISAD(G) schemas for records and finding tools to meet their own needs. There seems to be less standardisation amongst publishers and digitisation services. It does seem clear that the choice of metadata format depends on what is being digitised and for what purpose.

Cost was a recurring issue in the interviews and some interviewees argued that the cost of producing the metadata is becoming an obstacle to completion of digitisation projects and resources. The possibility of automating metadata production was raised by one interviewee. The organisation was exploring automatic extraction of metadata from files, but this would then have to be entered manually. This issue needs further exploration.

In terms of access to digitised resources, some interviewees saw metadata and interoperability as the key to this and the solution would be a distributed one.



So the idea is that if everyone adhered to more or less the same standard ...[indistinct], then possibly they can be cross- searched, they can be accessed some kind of you know cross-search catalogue or platform could be created ... We can build that, we can build that from metadata from the point of view of process as long as people conform to certain metadata standards.

(Expert)

6.5.5 Classification Schemes Used

Twenty-six out of the thirty-four survey respondents who had digitised material indicated the classification schemes used. Multiple answers were possible. Library of Congress Sub-Headings was the most frequent response, “own” subject access systems was the second most frequent response. Furthermore, several specialised thesauri were mentioned. A number of replies were not detailed enough (“thesaurus”, “subject headings”) to be meaningful.

Table 5

Subject classification schemes used by survey respondents

Classification Scheme	Number of Respondents
LCSH	13
“own”	6
AAT (“Getty”)	3
“none”	3
UKAT	2
“subject headings” (did not specify)	2
“module code number”	1
DDC	1
TMT and allied	1
ULAN	1
UNESCO	1
“thesaurus”	1
“undecided”	1
“string of search terms”	1

Less than two thirds (22) of the thirty-four digitisers answered a question on unique identifiers. There was no obvious trend in responses here. Respondents were either following an in-house protocol or using identifiers issued by the library management or content management system.



Table 6

Object identifiers used by survey respondents

Identifier Type	Number of Responses
unique number/ID/filename	4
database identifiers	3
in-house protocol	3
ISBN	3
not applicable	3
ISSN	2
library reference codes	2
control numbers and technical metadata	1
institutional reference number	1
item records/barcodes	1
POI	1
undecided	1
URL	1
none	1

6.6 Guidelines

This section summarises some of the publicly available sources of guidance for digitisation activities.

6.6.1 Library of Congress

The LC Digital Formats and Preferences site (<http://www.digitalpreservation.gov/formats/index.shtml>) describes sustainability factors that influence “preservability” of digital resources, such as disclosure, adoption and impact of patents. Furthermore, still image, sound, text and video formats are evaluated against the sustainability factors. Finally, there is a long list of format descriptions. This is a current resource that tracks the evolution of formats. The LC Standards (<http://www.loc.gov/standards/>) website contains links to LoC initiatives in resource description formats, digital library standards and resource discovery and retrieval protocols.

6.6.2 NOF-digitise technical standards and guidelines

The NOF-digitise programme has ended but the guidelines are still available (<http://www.peoplesnetwork.gov.uk/content/technical.asp>). However, they were last updated in February 2003, so they will become out of date. The NOF document describes the procedures and standards that projects funded by the programme had to conform to. The use of open standard formats is strongly encouraged. If projects used proprietary formats, they were required to investigate migration to open formats.



6.6.3 AHDS Guides to good practice

The service provides guides to standards and good practice in creating digital resources for five branches in the arts and humanities:

- archaeology
- history
- performing arts
- literature, language and linguistics
- visual arts

The resource (<http://ahds.ac.uk/creating/guides/index.htm>) does not prescribe a given standard for each type of material, but describes the available formats, which are also summarised in the table below.

Table 7

*Materials and associated formats*⁷²

Resource Type	Things to investigate
Texts	XML, TEI, Dublin Core, PDF
Dataset	Relational data model, SQL, normalisation, XML
GIS	Vector and raster data models, polygon topology, Open GIS standards
Library/Archive Catalogue	XML, OAI, Dublin Core, subject specific metadata schemas (e.g. DDI, VRA Core), XSLT, controlled vocabularies
Website	XHTML, W3C web accessibility standards, database connectivity (ODBC, ADO, JDBC), scripting languages (PHP, Javascript, ASP)
Audio Clips	Lossless compression MP3, sampling rates, bit rate
Still Images	Resolution and colour depth, TIFF, PNG, lossless compression, NISO technical metadata, VRA Core 3.0 metadata, Dublin Core
Moving Images	Compression, MPEG frame rate, resolution and colour depth, screen size, 'codecs'

6.6.4 TASI (Technical Advisory Service for Images)

This service (<http://www.tasi.ac.uk/>) is aimed at the HE and FE communities. Besides imaging workshops and a helpdesk, TASI offers introductory information and in-depth reports on the various aspects of project management, digital image creation, delivery and use. Coverage includes emerging formats and standards.

⁷² AHDS. <http://www.ahds.ac.uk/creating/information-papers/creating-introduction/index.htm>, 11.12.2003, [19.11.2004]



6.6.5 National Library of Australia Guidelines

The guidelines (<http://www.nla.gov.au/digital/standards.html>) explain the different techniques the NLA uses to create digital images of various materials and provide tables of resolution and bit-depths for different types of materials. They also describe the different output formats: a high-resolution uncompressed TIFF master file is created for every object. From this file, 72 ppi JPEGs are derived for web viewing and 72 dpi PDFs for printing. For cartographic materials, an interactive copy at 300ppi is derived from the master.

6.6.6 PADI (Preserving Access to Digital Information): Digitisation

The PADI website (<http://www.nla.gov.au/padi/topics/69.html>) is a gateway to digital preservation resources. The section on digitisation lists links to international resources such as articles, books, organisations, policies, strategies and bibliographies.

6.6.7 Moving Theory into Practice: Digital imaging tutorial

This resource only considers the production of image formats (<http://www.library.cornell.edu/preservation/tutorial/contents.html>). TIFF, GIF and PDF formats are considered to be de facto standards. It is very detailed in technical aspects but does not promote a single set of standards. Rather, the tutorial lists file formats and preferences for different types of projects.

6.6.8 The NINCH guide to good practice in the digital representation and management of cultural heritage materials

<http://www.nyu.edu/its/humanities/ninchguide/>

Compiled by the Humanities Advanced Technology and Information Institute (HATII), University of Glasgow, and the National Initiative for a Networked Cultural Heritage (NINCH), this guide deals with sustainability issues for digitisation projects and encourages the adoption of community based shared practice to ensure the broadest use of digitised material, ensure quality, consistency and reliability of resources and make them compatible with other projects and their resources.

6.6.9 List of guidelines from the European MINERVA initiative

This site lists a selection of digitisation guidelines from Australia, Canada, the UK and the USA, including the resources created by TASI, the AHDS and the LoC (<http://www.minervaeurope.org/guidelines.htm>).

6.7 Policy

A recent National Audit Office report sums up the policy situation in the UK. It says that there is no national oversight for digitisation⁷³. There is no UK national policy either on the selection of material for digitisation nor on the creation of a national digital library. Digitisation policies outline a library's intentions and aims for the handling and integration of electronic resources in future. The desk

⁷³ National Audit Office. *The British Library - providing services beyond the Reading Rooms*, http://www.nao.org.uk/publications/nao_reports/03-04/0304879.pdf, 2004, [accessed 03.09.2004], p. 4.



research found that only a small number of research libraries have (publicly available) digitisation policies. It is worth noting that digitisation policies, where extant, are distinct from collection development policies. Furthermore, the Library of Congress and the Bibliothèque nationale de France do not have published digitisation policies.

Four digitisation policies are described below:

6.7.1 The British Library (BL)

<http://www.bl.uk/about/policies/digital.html>

The British Library digitisation policy is separate from its collection development policy. The policy outlines objectives, scope and context and gives examples of current and past digitisation projects. The policy reflects the status of the British Library as a national body by including a statement on “national and international priorities for wider access to, and enhanced use of, integrated collections of digitised [...] materials”. It calls for integrating its policy into international policies in order to “avoid the duplication of digitisation” and to “allocate responsibilities for digitisation of particular materials to designated libraries”.⁷⁴ It is worth noting that one of the five objectives is a statement on generating commercially exploitable products⁷⁵. The policy is part of the British Library’s emerging digital strategy. The British Library has established a set of criteria that applies to all proposals to ensure that all digitisation activity fits within its overall strategy⁷⁶.

6.7.2 The National Library of Wales (NLW) http://www.llgc.org.uk/drych/digido_s01.htm

The National Library of Wales (NLW) has a digitisation strategy that includes policy statements on digitisation. It is the NLW policy that “the Library will digitise items from its collections (and, where resources are made available, from external collections) for the purpose of enhancing access for current and future users. It will also, where appropriate, use digitisation as a preservation tool”.⁷⁷ The strategy document outlines the NLW approach to digitisation which is, in summary, practically orientated. This is that the library will “consider very carefully the costs and benefits to the Library of any future external partnership projects prior to committing the Library” and the “requirements of the Library’s audiences will be the main factor in determining the content to be digitised and the method of delivery”. The main issues within the document are managerial and financial arrangements and possibilities, but selection is also mentioned. The statement that “A clear set of criteria for content selection will be established prior to the commencement of any digitisation project or programme”⁷⁸ calls for some kind of policy framework.

⁷⁴ British Library. *Digitisation*. <http://www.bl.uk/about/policies/digital.html>, [n.d.], [accessed 03.09.2004].

⁷⁵ *The Library sees digitisation as a way to “generate income from those products with market appeal that can be exploited commercially by a partner, or the British Library itself, consistent with the aim of maximising accessibility to the collection”* [British Library [n.d.]].

⁷⁶ National Audit Office. *The British Library - providing services beyond the Reading Rooms*, http://www.nao.org.uk/publications/nao_reports/03-04/0304879.pdf, 2004, [accessed 03.09.2004], p. 4.

⁷⁷ National Library of Wales. *Digitisation strategy 2001-2004*. http://www.llgc.org.uk/drych/digido_s01.htm, 2002, [accessed 04.12..2004].

⁷⁸ National Library of Wales. *Digitisation strategy 2001-2004*. http://www.llgc.org.uk/drych/digido_s01.htm, 2002, [accessed 03.09.2004].



6.7.3 National Library of Scotland (NLS) <http://www.nls.uk/professional/policy/docs/strategy2004.pdf>

The National Library of Scotland (NLS) has no separate policy on digitisation but as an integral part of its overall strategy has statements on strategic approaches to digitisation and digital collection management. Among the objectives, the NLS states that “through collaboration, we will enhance access to the knowledge, culture and history of the world”, that it will “place a high priority on extending our collection of electronic resources through digitisation and collaboration with other legal deposit and research libraries”. The strategy document says that the library will “develop the existing website into a Virtual National Library of Scotland”.

6.7.4 The National Library of Australia (NLA) <http://www.nla.gov.au/policy/digitisation.html>

“The prime purpose of digitisation activities will be to enhance access to the Library’s collections.”⁷⁹ The document outlines the goals, principles and selection criteria for digitisation. It further indicates how different types of digitisation projects will operate, how the Library intends to manage the digital resources and provide access to them. The document mentions adherence to standards and the preservation of the original materials and marketing and promotion of the digital collections. It also contains coordination and reporting lines and the policy review frequency.

⁷⁹ National Library of Australia. *Digitisation policy 2000-2004*, <http://www.nla.gov.au/policy/digitisation.html>, [n.d.], [accessed 03.12.2004].

7 Support Services in the UK

This section describes UK services that offer support at different stages of the creation, management and delivery process of digital resources. Services were identified through the desk research. Representatives of a number of services offering support for digitisation were interviewed to discover what services they offered, how they were funded, who they offer services to, their input to the development of standards and metadata, how they work together, what services are valued and used more than others and what plans they have for the future. Digitisation support services are generally funded in one of three ways: self-funded, funding received from JISC and/or other funding bodies, for example AHRB, or a combination of both. Some services initially received funding but are now self-sustaining.

7.1 Services Offered

There is much similarity between the services offered by the different organisations. These include:

- Mailing lists
- Advice and expertise in all aspects of digitisation projects
- Training and workshops
- Print and Web documents
- Guides and standards information
- Preservation information

Other services offered by particular services include consultancy, project management, project management training, digitisation, sustainability of collections, including economic sustainability, digital preservation management, assisting with funding applications and conferences. While some organisations offer specific services, others offer assistance covering the entire process of digitisation. Some support services focus on specific disciplines or areas of digitisation, for example images or manuscripts, arts and humanities or sciences. Some services acquire and curate digital collections while others limit services to advice and training.



While interviewees stated that all the services offered were used frequently, interviews identified services used and requested more often. These include hands-on workshops, Web documents and other guidance information providing advice on all aspects of project management, help desk services and ongoing support for projects following training. Survey responses to a question on use of services are reported in section 7.10.

7.2 Communities Served

The existing digitisation support services stressed the importance of the services they provide and the growing demand from users/clients. Some services limit their work to higher and/or further education, while others serve the commercial and public sector, including publishers, museums and libraries. Certain services were established to assist a number of specific projects and have since developed to assist other projects and, in some cases, other sectors. Other services were established to assist their funding body in digitisation projects and projects supported by the funding body must work with the service. One support service works with its funding body to conduct technical reviews of applications, including standards and formats.

Each of the support services conducted evaluations of the services provided and regularly received feedback from users/clients. This feedback was used to improve or add services required by the community they serve. Changes included: more practical, hands-on training, adding functionality, assistance in promoting use and access to resources.

7.3 Support Service Input into Standards, Metadata and Formats

The majority of support services promote and offer guidance and advice on metadata standards and file formats. Some interviewees stated that they make strong recommendations for metadata and standards. However, the majority only make projects/clients aware of standards and formats and cannot do more than encourage use.

Some run workshops and seminars on metadata and others make projects aware of what standards are used in similar areas/communities and encourage projects to document those used. One service works alongside its funding body and coordinates standards and metadata with new digitisation projects. Certain services state they are involved in setting standards and work with other bodies in doing so.

The majority of support services realise the importance of metadata, standards and appropriate formats but feel their role is not to state what should be used, but to raise awareness and encourage use. Each digitisation project and discipline has different needs and therefore one set of standards cannot be recommended at present.



UK digitisation support services are described in the following sections. They are listed in alphabetical order under the following categories:

- Guidance/consultancy
- Copyright clearance
- Digitisation and software engineering
- Repositories/Archives
- Network/Access
- Resource discovery

Several of the services fall into more than one of these categories, e.g. offering consultancy with digitisation services. These are mentioned under each relevant heading.

7.4 Guidance/Consultancy

7.4.1 Arts and Humanities Data Service (AHDS)

<http://www.ahds.ac.uk/>

Funded by the AHRB and JISC “to collect, preserve and promote electronic resources”⁸⁰ in the arts and humanities, the AHDS consists of five services: AHDS archaeology, AHDS history, AHDS literature, language and linguistics, AHDS performing arts, and AHDS visual arts. The AHDS identifies standards and promotes them in its “Guidelines to Good Practice”, offers digitisation workshops and cataloguing services. The AHDS is concerned with data rather than library collections.

7.4.2 British Universities Film and Video Council (BUFVC)

<http://www.bufvc.ac.uk/>

The Council is funded by JISC to promote “the production, study and use of film and related media in higher and further education and research”⁸¹. It offers courses, consultancy and manages the Managing Agent and Advisory Service (MAAS), which delivers moving images and sound to the HE/FE communities, offers rights clearance and metadata delivery, and provides guidance on digitisation of sound and film⁸².

7.4.3 Digital Curation Centre (DCC)

<http://www.dcc.ac.uk/>

The recently launched DCC aims to develop programmes and services in order to become a focus of research in digital curation. It is primarily concerned with born digital material but the expertise gained could also benefit digitised collections. It is funded by JISC and the eScience programme.

⁸⁰ AHDS. *About the Arts and Humanities Data Service*. <http://www.ahds.ac.uk/about/index.htm>, 02.11.2004, [accessed 30.11.2004].

⁸¹ BUFVC. *About us*. <http://www.bufvc.ac.uk/aboutus/index.html>, [n.d.], [accessed 30.11.2004].

⁸² Managing Agent and Advisory Service. *About us*. <http://www.bufvc.ac.uk/maas/aboutus/index.html>, [n.d.], [accessed 30.11.2004].



7.4.4 Higher Education Data Service (HEDS)

<http://heds.herts.ac.uk/>

Funded by JISC, HEDS offers its consultancy and production services to not-for-profit organisations from any country. The consultancy services cover feasibility studies, designing digitisation units, digital management and tendering⁸³.

7.4.5 Joint Information Systems Committee (JISC)

<http://www.jisc.ac.uk/>

Funded by the Further and Higher Education Funding Councils, "JISC acts as an umbrella over many different digitisation initiatives and advisory committees in the UK"⁸⁴. It funds and advises initiatives that promote the use of ICT to support studying, teaching and research⁸⁵.

7.4.6 Technical Advisory Service for Images (TASI)

<http://www.tasi.ac.uk/>

This JISC-funded service assists the higher and further education communities by providing advice on and training in the creation and delivery of digital content and in the management of digitisation projects.

7.4.7 UKOLN

<http://www.ukoln.ac.uk/>

UKOLN is mainly funded by JISC and the Museums, Libraries and Archives Council (MLA). A "centre of expertise in digital information management", it provides services and advice on metadata standards and digital preservation to the libraries and education communities, among others⁸⁶. After developing the NOF-digitise technical standards and guidelines with MLA⁸⁷, UKOLN helped develop EnrichUK, the gateway to NOF-funded digital resources⁸⁸.

⁸³ About HEDS, <http://heds.herts.ac.uk/about.html>, [n.d.], [accessed 30.11.2004].

⁸⁴ TASI. Signposts to relevant organisations. <http://www.tasi.ac.uk/resources/signposts1.html>, [n.d.], [accessed 03.12.2004].

⁸⁵ JISC. <http://www.jisc.ac.uk/index.cfm?name=home>, 28.04.2003, [accessed 30.11.2004].

⁸⁶ UKOLN. <http://www.ukoln.ac.uk/>, 26.11.2004, [accessed 30.11.2004].

⁸⁷ NOF-digitise technical standards and guidelines, http://www.peoplesnetwork.gov.uk/content/ts_index.asp, 2003, [accessed 01.12.2004].

⁸⁸ About EnrichUK. <http://www.enrichuk.net/site/about/>, 2003, [accessed 01.12.2004].



7.5 Copyright Clearance

7.5.1 Higher Education Resources ON-demand (HERON)

<http://www.heron.ingenta.com/>

Acquired by Ingenta in 2002, HERON was created in 1998 by the eLib Programme as a one-stop copyright clearing and document delivery service.⁸⁹ HERON acts as a copyright clearing house that digitises and delivers requested excerpts or articles to the UK academic community. These are added to a large database of already digitised documents that HERON maintains in its function of trusted repository⁹⁰.

7.6 Digitisation and Software Engineering

7.6.1 Centre for Data Digitisation and Analysis (CDDA)

<http://www.qub.ac.uk/cdda/>

The CDDA possesses the necessary hardware, staff and expertise to undertake large-scale and/or difficult digitisations of print material. A comprehensive self-funding service, spanning image capture, dissemination and research, the CDDA was the digitisation partner of well-known projects such as BOPCRIS and the Act of Union⁹¹.

7.6.2 Centre for Digital Library Research (CDLR)

<http://cdlr.strath.ac.uk/>

The CDLR is run by the Directorate of Information Strategy and the Department of Computer and Information Sciences at the University of Strathclyde and funded from various sources. It participates in “research and development projects in all areas of digital library and information management.”⁹² Activities include digitisation, metadata workflow studies and website maintenance. Deliverables include the Glasgow Digital Library, the Victorian Times resource as well as the BUBL Information Service.

7.6.3 HEDS

<http://heds.herts.ac.uk/>

HEDS production services range from scanning images and text capture to mark-up. Some of the NOF-digitise projects used HEDS⁹³.

⁸⁹ History of HERON, http://www.heron.ingenta.com/about/about_history.html, [n.d.], [accessed 02.11.2004].

⁹⁰ What does HERON do?, http://www.heron.ingenta.com/about/about_what.html, [n.d.], [accessed 02.11.2004].

⁹¹ The Centre for Data Digitisation and Analysis, <http://www.qub.ac.uk/cdda/>, 27.07.2003, [accessed 30.11.2004].

⁹² Projects & initiatives. <http://cdlr.strath.ac.uk/projects/projects.htm>, 14.07.2004, [accessed 13.12.2004].

⁹³ About HEDS. <http://heds.herts.ac.uk/about.html>, [n.d.], [accessed 30.11.2004].



7.7 Repositories/Archives

The Digital Preservation Coalition has recently issued a directory of digital preservation repositories and archives in the UK (<http://www.dpconline.org/docs/guides/directory.pdf>). This includes both public and private sector repositories. They include:

7.7.1 Arts and Humanities Data Service

www.ahds.ac.uk/

Besides guidance, the AHDS also provides storage and long-term preservation measures for digitised collections created by individuals, projects or organisations⁹⁴.

7.7.2 Edinburgh Data and Information Access (EDINA)

<http://edina.ac.uk/>

This JISC-funded data centre hosts sixteen resources in various subject disciplines that the tertiary education community can subscribe to via their institution.

7.7.3 Manchester Information & Associated Services (MIMAS)

<http://www.mimas.ac.uk/>

The MIMAS data centre is funded by JISC and offers networked access to data and information resources for the HE, FE and research communities in the UK. Some of the services require a subscription. MIMAS also hosts resources EnrichUK, BOPCRIS, JSTOR and the Digital Library of Historical Directories.

7.7.4 Oxford Text Archive (OTA)

<http://ota.ahds.ac.uk/>

The Archive is funded by JISC and hosts AHDS Literature, Languages and Linguistics service. The deposited digitised text is catalogued, preserved and distributed by the Archive. The OTA provides a search interface and, depending on the document, access restrictions may apply.

7.7.5 UK Data Archive (UKDA)

<http://www.data-archive.ac.uk/>

Funded by JISC, ESRC and the University of Essex, it hosts AHDS History and the Census Registration Service and is a partner of the Economic and Social Data Service (ESDS). It accepts digital materials with limited amounts of hard copy documentation for archiving. The Archive's catalogue can be searched by anyone, but only registered users can access and download the holdings.

⁹⁴ Depositing data with the AHDS. <http://www.ahds.ac.uk/depositing/index.htm>, [n.d.], [accessed 13.12.2004].



7.8 Resource Discovery

7.8.1 PINAKES: a subject launch pad

<http://www.hw.ac.uk/libWWW/irn/pinakes/pinakes.html>

The resource lists 45 subject hubs and 11 “multi-subject” gateways, including RDN (UK), Renardus (Europe) and Infomine (University of California, Riverside). There is no search facility and no resource is dedicated to digitised materials. However, some hubs and gateways contain a “digital library” section, which usually contains links to both digitised and born digital resources.

7.8.2 Resource Discovery Network (RDN)

<http://www.rdn.ac.uk/>

This gateway is aimed at HE and FE and funded by JISC, ESRC and AHRB. It provides free access to selected Internet resources through eight subject-based hubs: ALTIS, Artifact, BIOME, EEVL, GEsorce, HUMBUL, PSigate and SOSIG.

7.8.3 JISC Resource guides

<http://www.jisc.ac.uk/index.cfm?name=coll>

JISC has created seven subject-based guides to the online resources available to the HE community. They cover collections (free or subscription-based) and gateways but also support services.

7.9 Access

7.9.1 Digital Media Access Group (DMAG)

<http://www.dmag.org.uk/>

DMAG is part of the Department of Applied Computing in the University of Dundee and offers accessibility consultancy for the design of web sites and other digital information resources. DMAG has an evaluator group of disabled and non-disabled persons that evaluate resource accessibility.

7.9.2 JANET

<http://www.ja.net/>

JANET is a government-funded high speed network managed by UKERNA. It links all research councils, HE and FE institutions to allow fast and reliable access to geographically separated resources but also offers email, videoconferencing and nameserver services⁹⁵.

⁹⁵ About JANET. http://www.ja.net/about_JANET.html, [n.d.], [accessed 01.12.2004].

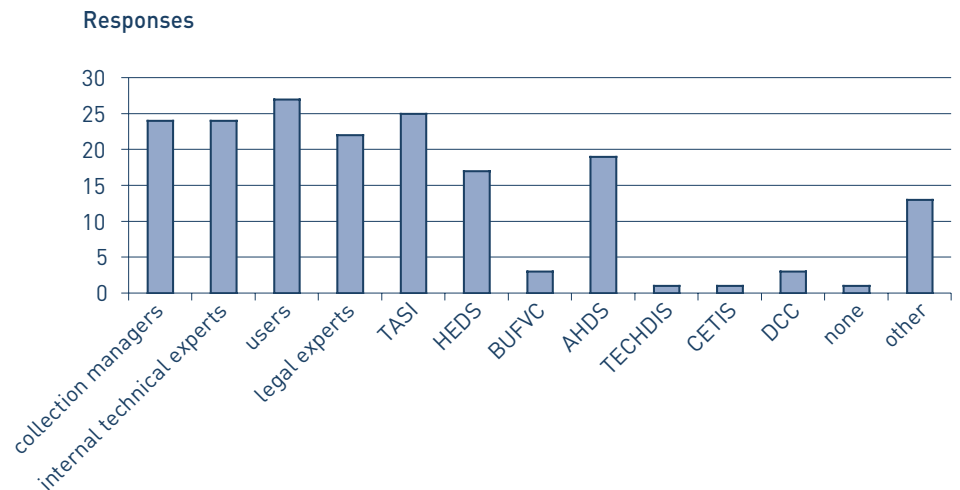


7.10 Use of Support Services by Survey Respondents

Survey respondents who have already digitised and those at the planning stages were asked which sources of advice they had used. Thirty-seven responses were received. Multiple responses were possible.

Figure 16

Sources of advice consulted



Internal source sources of advice, including collection managers and technical experts were frequent responses. Users were also used as a source of advice. It is not clear why. One could presume that users could help on selection, but previous responses indicated that demand was not a major selection criterion. JISC funded services, such as TASI and AHDS were also used. The Digital Curation Centre may become more widely used as it becomes more established and institutions have more need at support in preserving resources. The lack of use of the BUFVC may reflect the nature of the source materials digitised, since most respondents have digitised still rather than moving images. The accessibility consultancy service TECHDIS is also little used. The single answer for “none” is contradicted by a second submission from the same institution, which indicates that several sources of advice were indeed, consulted, most of them internal.

Table 8 shows other sources of advice used.

Table 8

“Other” sources of advice consulted

Centre for Digital Library Research: possibly about conversion (1)

Council on Library and Information Resources (1)

Cornell: possibly about imaging (1)

Consortium of Research Libraries (1)

Digital Library Federation (2)



Digital Preservation Coalition (1)
DPO(?) (1)
External experts (3)
HERON: copyright clearance and digitisation (2)
Image listserv: imaging (1)
Library of Congress: metadata (1)
“Metadata manager” (1)
National Library of Australia (1)
New Opportunities Fund: conversion standards (1)
OCLC Pica: cataloguing (1)
Project partners (1)
Research Libraries Group (2)
Text Encoding Initiative: metadata (1)
Conferences, seminars and workshops (1)
“and many more”

Respondents also provided comments on the sources of advice and guidance available.

Like handling archives there are few available practical courses out there - most if it involves consultancy/bespoke.

We paid for HEDS consultancy back in 2000 and 2001 which was extremely useful. We signed up to HERON straight away in 2000.

BUFVC not really very helpful. Their a/v courses are relevant but expensive and not in helpful locations i.e. never held in the centre of the UK! Expensive for two or more people to attend - as with some other orgs e.g. TASI (even though the West Midlands have a 10th of the UK's population!).

We had a lot of advice when we started out in 2000 and I also attended the CEDARS conference in York.

We have been heavily involved with the current CLA (digi) license trial etc.



7.11 Support Services, Standards and Interoperability

All of the support services interviewed stated that they felt their role in providing guidance and advice in relation to metadata and standards had become more important and valued. Many of the support services felt they provided an increasing amount of detailed information on metadata and standards. Because of this, many of the services consult with other bodies in the creation/setting of metadata standards.

The support services also run workshops on metadata and report high attendance. The support services see themselves as having a prominent role to play in the area of metadata and standards in the future and many have plans to work with other bodies in the creation and setting of such standards. The support services, however, felt that their role in relation to formats and metadata is making projects/institutions aware of the varying formats and standards available and making recommendations where possible as to what should be adopted. The support services felt they could not impose the use of standards and formats but did what they could to make groups aware of the need for metadata standards and file formats.

I think sometimes they feel that we're a little too pushy with the standards. Well because people sort of want to do it their own way. You know, they've got an idea of what they want to do and to have to learn a standard and think how that might apply
[Support service].

A number of support services commented that in general, those involved in the digitisation of resources were mindful of, and using, standards.

But you know, at the same time people who are really serious about it recognise the benefits of having some form of standards
[Support Service].

I think we want to encourage people to use standards wherever possible but we have to recognise that there are many people, for very good reasons have to want to and have to do things differently
[Support Service].

We encourage working to a standard definitely. There are master and surrogate archives, these are TIFF compresses, the display depends on the need, this has to be fit for purpose. We feed into the JISC standards and input into these too
[Support service].

In terms of interoperability, the support services made groups aware of interoperability issues, as did some funding bodies.



7.12 Overview and Future for Support Services

It is clear that there is some overlap between different support services and we found only limited evidence of collaboration between different support services. While some support services representatives mentioned collaboration with funding bodies and the communities they served, only a few collaborated with other support services, and this collaboration was limited. Some felt that training was repeated by other services and therefore tried to offer unique and valued training in other areas, for example strategic management rather than technical training.

The survey found that some digitisers were using a combination of different services. They were using them in different combinations, but the most frequent combinations involved AHDS, HEDS and TASI (see Table 9).

Table 9

Combination of Support Services Used by Survey Respondents

Combination of Support Services Used	Frequency of Responses
AHDS + HEDS + TASI	11 (2 with a mention of BUFVC)
AHDS + TASI	6
TASI	6 (3 from single-material digitisers)
AHDS + HEDS	3
HEDS	2 (all from single-material digitisers)
HEDS + TASI	2 (1 with a mention of BUFVC)

It appears that AHDS and BUFVC were never used alone, while TASI and HEDS were, although often by projects focusing on a single type of material (“single-material digitisers”). Unfortunately, the survey did not provide any other data on what these services were being used for, in order to gauge why survey respondents needed to use multiple services, for example if the AHDS did not meet all the needs of respondents digitising arts and humanities material.

The future role for, and plans of the support services differ according to funding models and communities served. Some services are self-supporting and have plans to expand their services. Others rely on funding, with their continued activity dependent on upcoming evaluation and review of the services they offer. Because of this, the key strategic aim is to secure future funding. Other services have plans for consolidation and reorganisation, greater focus on subject areas (e.g., the sciences and medicine) and subject outreach, extension of preservation activities and further collaboration with funding bodies regarding metadata standards and the broader standards framework. Some of the support services have plans to work internationally and have already begun work in this area.



All of the support services believed they offered valued and vital services for the communities they served, that they were needed and that demand would continue to be in the future.

8 Funding Structures and Opportunities for Digitisation Projects

There have been several studies on the costing⁹⁶ of digitisation projects. Synopses of project costs are available at various institutions including AHDS and HEDS. Costs for digitisation are significant and include: documentation and preparation, conversion costs, ensuring copyright status and rights clearance of material, equipment costs, human resources, and ongoing maintenance costs. Tanner states:

The costs are variable in the extreme and good feasibility and piloting is essential to gain proper metrics of cost.⁹⁷

With the high costs involved in digitisation many projects require outside funding. The U.S. based National Initiative for a Networked Cultural Heritage (2002) reported on two surveys that found digital projects obtained funding from a combination of sources including institutional budgets, public grants, corporate sponsorship or private donation. From the desk research, it looks like UK projects obtain funds from a similar range of sources. Prominent funding bodies for UK-based projects are listed and discussed in the sections below. This discussion is based on desk research and interviews with representatives of funding bodies. Questionnaire findings on funds received and sought by UK research libraries are also described in this chapter.

Some funding bodies have strategies for funding digitisation, while others do not specifically fund digitisation (these bodies are aware that digitisation is included in some of the project funding allocated, but don't fund pure digitisation projects). When projects/groups apply for funds to digitise resources/collections, certain bodies are generally the first port of call. The funding body selected usually depends on what is to be digitised, the subject area, the amount of funds required, and the target user community. Some interviewees named certain funding bodies as regular funders for their digitisation activities (such as the Andrew W. Mellon Foundation). Some mentioned that applications to certain funding bodies had been unsuccessful,

⁹⁶ For example see Lee (Lee 2001, Chapter 4) and Simon Tanner and Joanne Lomaz Smith (Tanner and Smith 1999). Tanner and Smith from the HEDS mention costs per unit item of between £ 0.10 and £1.50 depending on quality (conversion cost only).

⁹⁷ Tanner, Simon. Librarians in the digital age: planning digitisation projects. *Program*, 2001, 35(4), 336.



and therefore in most cases these were not contacted again. Other funding bodies were avoided due to lengthy processes of application and difficulty in receiving funding (for example the European Commission).

8.1 Funding of digitisation

The funding of digitisation depends on the funding body's specific remit, subject area and audience. A number of funding bodies allocate money only to higher and further education, while others cover only museums, libraries and archives. Others have a larger remit but focus on specific areas e.g., heritage or bioscience. Funding bodies generally do not offer funds solely for the purpose of digitisation of resources, and are concerned more and more with issues of preservation and sustainability. Funding bodies are becoming more concerned with the infrastructure available to support in the long-term the resources or collections that are digitised In the long-term

In terms of allocating funding, funding bodies have two general approaches. A number of funding bodies have strategic priorities for allocating funding, while others allocate funding in responsive mode, without thematic priorities, on an ad hoc basis, depending on applications received:

We give it to the best ideas.

(Funding body)

Mechanisms for allocating funding include subject committees reviewing applications in specific subject areas, selecting areas/disciplines of importance, and allocating funding in one area at a time. Other projects are funded based on a decision-making matrix. A few funding bodies stated that funding was driven by the research interests of the community. A number commented that because of this, the allocation of funding is uneven and some bodies are therefore considering determining some strategic priorities.

8.2 Collaboration Between Funding Bodies

Representatives from some funding bodies reported collaborative activity. This was usually, however, in the joint funding of a particular project or initiative and did not involve further collaboration in relation to funding strategies or input into standards or formats. Million of pounds have been spent on digitisation projects in the UK, and a number of project representatives reported receiving funding from a number of sources. Again, who was approached for funding varied depending on the organisation requiring the funding, the material/ resources being digitised and the target audience.

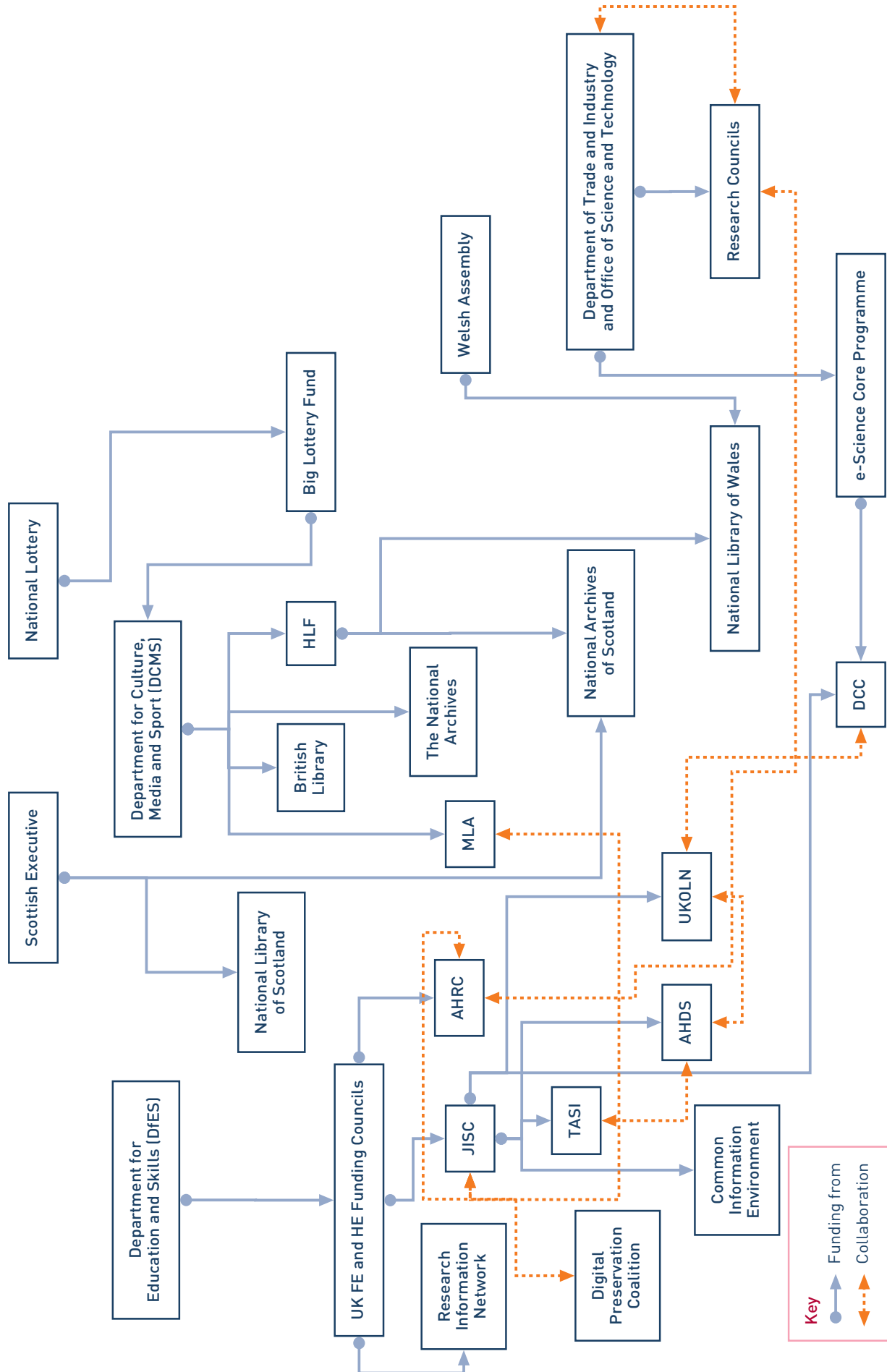
A number of funding bodies reported collaboration with support services, either through funding a support service or through specific collaboration e.g., AHRB and JISC fund AHDS and AHDS provides technical input to the selection of applications for AHRB funding. Individual projects collaborate with their funding bodies as specified by the individual funding body.

Figure 8.1 provides an overview of relationships between libraries, archives and funding bodies.



Figure 17

Relationships between Funding Bodies, Support Services, Libraries and Archives





8.3 Input to Standards and Formats

Only one funding body reported involvement with the use of standards in funded projects.

CIE guidelines and standards are always adhered to. But of course, standards are always changing so we allow for changes in standards, but all the projects are standards driven and are all laid out in the project plans.

(Funding body)

The majority of funding bodies interviewed pointed out the difficulties in becoming involved in presenting the standards, metadata and formats used in digitisation. In general, funding bodies request information in applications regarding the standards that will be used, but do not feel they can dictate specific standards as each organisation and discipline varies. Other bodies commented that they would like to prescribe specific standards, but feel they cannot as these change frequently.

Since the funding bodies do collaborate with support services for digitisation, they advise those receiving funding to work with the support services on issues regarding standards and formats. One good example of collaboration is AHDS who work with the AHRB. In general, funding bodies realise the need and importance for standardisation but felt it was not their role to impose standards and formats.

8.4 UK Funding Bodies

The Technical Advisory Service for Images (TASI) website provides information on funding bodies that potentially fund digitisation projects⁹⁸. Higher Education Funding Council for England (HEFCE) - <http://www.hefce.ac.uk/>

- Scottish Higher Education Funding Council (SHEFC) - <http://www.shafc.ac.uk/>
- Higher Education Funding Council for Wales (HEFCW) - <http://www.elwa.ac.uk/>
- Department for Employment & Learning, Northern Ireland (DEL) - <http://www.delni.gov.uk/>
- Joint Information Systems Committee (JISC) - <http://www.jisc.ac.uk/>
- The Arts and Humanities Research Board (AHRB) - <http://www.ahrb.ac.uk/>
- The National Lottery - http://www.culture.gov.uk/national_lottery/default.htm
- The Arts Council of England - <http://www.artscouncil.org.uk/>
- The Scottish Arts Council - <http://www.sac.org.uk/>

⁹⁸ TASI. *Potential sources of funding for digitisation projects*. <http://www.tasi.ac.uk/resources/funding.html>, [n.d.], [accessed 20.11.2004].



- The Arts Council of Wales - <http://www.artswales.org/>
- The Arts Council of Northern Ireland - <http://www.artscouncil-ni.org/>
- National Endowment for Science, Technology and the Arts (NESTA) - <http://www.nesta.org.uk/>
- The New Opportunities Fund (NOF)/Big Lottery Fund - <http://www.nof.org.uk/> / <http://www.biglotteryfund.org.uk/>
- Research Councils UK - <http://www.research-councils.ac.uk/>
- Museums, Libraries and Archives Council - <http://www.mla.gov.uk/index.asp>
- European Commission - http://europa.eu.int/comm/research/fp6/index_en.html

Other funding bodies include:

- The Andrew W. Mellon Foundation <http://www.mellon.org/index.html>
- The Wellcome Trust (<http://www.wellcome.ac.uk/>)

8.5 Education and Research Funding

8.5.1 Higher Education Funding Councils

Following the Further and Higher Education Act in 1992⁹⁹, four UK funding bodies were set up. These are the Higher Education Funding Council for England (HEFCE), the Scottish Higher Education Funding Council (SHEFC), the Higher Education Funding Council for Wales (HEFCW), and the Department for Employment & Learning, Northern Ireland (DENI, now the Department of Education Northern Ireland). These bodies were set up to fund higher education throughout the UK, distributing public funds to promote high quality education and research. HEFCE also has a Private Finance Unit, which provides advice and information to higher education institutions about the opportunities for public and private partnerships.

Research Councils UK is a strategy group, formally launched in May 2002, which brings together seven research councils. Digitisation projects are funded if related to any of the areas covered by the Research Councils, which include:

- The Biotechnology & Biological Sciences Research Council (BBSRC <http://www.bbsrc.ac.uk/>) is the leading funding agency for academic research and training in the biosciences at universities and institutes throughout the UK. BBSRC receives most of its money through the Government's Office of Science and Technology.

⁹⁹ *Further and Higher Education Act 1992* [c. 13], http://www.legislation.hms.gov.uk/acts/acts1992/Ukpga_19920013_en_1.htm, 1992, [accessed 15.11.2004].



- The Engineering & Physical Sciences Research Council (EPSRC <http://www.epsrc.ac.uk/>) is the UK Government's leading funding agency for research and training in engineering and the physical sciences. The EPSRC invest around £500 million per annum in a broad range of subjects.
- The Economic & Social Research Council (ESRC <http://www.esrc.ac.uk/>) funds research and training in social and economic issues. An independent organisation, established by Royal Charter, the majority of funding is again received through the Government's Office of Science and Technology.
- The Medical Research Council (MRC <http://www.mrc.ac.uk/>) funds medical and related research. Funded via the Office of Science and Technology, the MRC works in close partnership with health departments, other research councils, industry and others to identify and respond to current and future health needs.
- The Natural Environment Research Council (NERC <http://www.nerc.ac.uk/>) funds research on earth system science with a budget of about £220 million per annum to fund scientific research in universities and at its own sites. About 2,700 people are employed and a further 1,800 are funded annually through a variety of research and training awards in university departments and other bodies.
- The Particle Physics & Astronomy Research Council (PPARC <http://www.pparc.ac.uk/>) is the strategic science investment agency funded by the UK government. The PPARC provides grants, studentships and studentships to scientists in UK universities. There is no evidence of actual digitisation projects that have been funded as yet.
- The funding councils also allocate funds to the Arts and Humanities Research Board (AHRB) and for innovations in the national IT infrastructure through the Joint Information Systems Committee (JISC) (see below).
- The Council for the Central Laboratory of the Research Councils (CCLRC <http://www.cclrc.ac.uk/>) was formed in 1995 and is an independent, non-departmental public body of the Office of Science and Technology. The Council works with the other research councils to set future priorities that meet the needs of UK science.

8.5.2 The Joint Information System Committee (JISC)

Established in 1993, JISC acts as an advisory body to the funding councils and is concerned primarily with networking and specialist information services. JISC's original remit was to serve the UK higher education sector. Since then it has expanded its remit and now supports a much larger community of institutions, including further education colleges and, recently, wider education and the life-long learning community.

JISC has established itself as a major player in the UK information community and is generally regarded as a success story.¹⁰⁰

¹⁰⁰ Follett, Brian K. *A Review of the Joint Information Systems Committee (JISC)*. http://www.jisc.ac.uk/index.cfm?name=report_jisc_review, 05.11.200, [accessed 05.12.2004].



JISC is organised through a secretariat and committee structure populated by members of relevant communities. It is funded by 'top-sliced' money, with funds allocated through community calls.

JISC provides the sector with hardware (and middleware) in the form of JANET, the government funded network for education and research, and provides a range of services to advise and support the community. The JISC 2004–2006 strategic plan mentions possible future developments:

*Research Grid, research library needs, eLearning and eScience, technical standard setting, managed and virtual learning environments, and content provision*¹⁰¹.

In line with this, JISC recently announced (October 2004) that it is making grants totalling more than £1million to nine UK educational institutions and their partners to support digital preservation and asset management in UK higher and further education institutions.

*Institutions increasingly invest heavily in digital materials but policies and procedures for long-term management of digital assets remain underdeveloped. JISC is funding projects in this programme to raise awareness of digital preservation issues and encourage and set in motion a process of integrating digital preservation and asset management into institutional strategies and operations.*¹⁰²

The grants are another step in the process initiated as part of the JISC strategy to help resolve challenges involved in collecting, preserving and making available digital content. Projects include areas of preservation, disposal, training modules for preservation, development of digital assessment tools, OAIS and METS compliance, specific digitisation projects and digital preservation and asset management of curricular documents in FE Colleges.

JISC supports digitisation (see Chapter 9.4) by funding projects and services that provide content, and maintains digital collections that are collated by licensing agreements with data providers and services. It acts as a mediator or a central licensing body.

However, JISC is currently reviewing its collection strategy. On the basis of its intention to acquire content for its user community in perpetuity in a sustainable way, the emerging new strategy for JISC is to find ways of how to get involved in digitisation projects at an earlier stage to allow for standards to be created across the board.

¹⁰¹ JISC. *Strategy 2004–06*. http://www.jisc.ac.uk/index.cfm?name=strategy_jisc_04_06, 14.05.2004, [accessed 05.12.2004].

¹⁰² JISC. *Projects funded under the JISC Circular 4/04 programme have been announced*. http://www.jisc.ac.uk/index.cfm?name=programme_404, 29.10.2004, [accessed 17.11.2004].



Overall, JISC plays a major role in the UK library and information sector. It sets policy, distributes funds, and acts as an advisory service to institutions throughout the country. JISC also runs national services and therefore has the capacity to host digital and digitised collections as it has done through, for example, the AHDS and others.

8.5.3 The Arts and Humanities Research Board (AHRB)

The AHRB was established in 1998 and is supported by the British Academy, HEFCE, SHEFC, HEFCW and DEL.

The AHRB funds research and postgraduate study within the UK's higher education institutions and provides funding for museums, galleries and collections that are based in, or attached to, higher education institutions in England¹⁰³.

The AHRB aims to support the development of more effective relationships between the different communities and its strategic objectives are to support and promote the pursuit of high-quality and innovative research and the development of the scholarly and intellectual infrastructure.

A Board of Trustees is responsible for ensuring that the AHRB uses the funding in accordance with the agreed strategic objectives and targets.

The Board of Management reports to the Board of Trustees with recommendations on issues of academic policy and development. [...] Decisions on the grant of awards are delegated to programme committees which operate through a rigorous process of peer review involving panels of experts.¹⁰⁴

Members of the board and panels are primarily practising members of the research community.

The AHRB sees itself as one body among many in pursuing these aims, and puts special emphasis on the need for co-operation. The AHRB seeks:

to ensure, through partnerships with publishers and others, through e-publishing and other means, that major resources for each of the key disciplines and subject areas of the arts and humanities are available and accessible to a wide range of audiences in digital form¹⁰⁵.

The AHRB does not determine priorities but allocates awards solely on the grounds of the quality of research proposals.

¹⁰³ Arts and Humanities Research Board. *Supporting research into the arts and humanities*. <http://www.ahrb.ac.uk/>, [n.d.], [accessed 04.09.2004].

¹⁰⁴ Arts and Humanities Research Board. <http://www.ahrb.ac.uk/>, [n.d.], [accessed 04.09.2004].

¹⁰⁵ Ibid.



The AHRB has no specific strategy for the funding of digitisation. Resource creation projects are funded on merits independent of their output format. However the AHRB is quietly moving away from a responsive mode of funding and is moving towards a more strategic method.

The AHRB has also formed a strategic partnership with the Arts and Humanities Data Service (AHDS) with the goal of promoting shared aims with regard to the application of information and communication technologies in the Arts and Humanities. One outcome of the strategic partnership between the AHRB and the AHDS is that any electronic resources created under AHRB funding have to be offered for deposit at the appropriate AHDS data service.

8.6 The National Lottery

The UK National Lottery distributes funds in six areas. These include the arts, projects to mark the new millennium, heritage, charities, sports and health, education and the environment. The proceeds are distributed by a number of independent distributing bodies, e.g., funds for the arts are distributed by the four National Arts Councils within the UK: the Arts Council of England, the Scottish Arts Council, the Arts Council of Wales, and the Arts Council of Northern Ireland. Funds are also distributed through the New Opportunities Fund/Big Lottery Fund and by the National Endowment for Science, Technology and the Arts (NESTA), described below.

8.6.1 National Endowment for Science, Technology and the Arts (NESTA)

This organisation was formed under the National Lottery Act 1998, and distributes money from the Lottery to support and promote talent, innovation and creativity. It covers the fields of science, technology and the arts throughout the UK. Such funds may include the digitisation of material. However, there is no evidence to suggest any projects have been funded to date.

8.6.2 The New Opportunities Fund (NOF)/Big Lottery Fund

The New Opportunities Fund was the Lottery distribution body responsible for dispensing Lottery grants for health, education and the environment. NOF distributed funds for many small digitisation projects (e.g., Am Baile (Gaelic Village) Project). However, recently, the Big Lottery Fund was created by merging the New Opportunities Fund and the Community Fund. This fund will distribute half the money available for good causes from the National Lottery.¹⁰⁶

8.7 The Arts Councils

The Arts Councils are responsible for developing, sustaining and promoting the arts. Their funds come from both central government and the National Lottery. In England, funds are distributed through the ten regional Arts Boards to initiatives that develop the arts and make them more accessible. In Scotland, an annual grant is given by the Scottish Executive, which is then distributed

¹⁰⁶ About New Opportunities Fund. <http://www.nof.org.uk/default.aspx?tc=17&tct=1>, [n.d.], [accessed 02.11.2004].



to individual artists and organisations. The Arts Council of Northern Ireland aims to develop and improve the knowledge, appreciation and practice of the arts, increasing public access to the arts and encouraging the provision of arts facilities and events. All Arts Councils potentially provide funds for digitisation.

8.8 Museums, Libraries and Archives Council (MLA)

The Museums, Libraries and Archives Council is a national development agency, a non-departmental public body, sponsored by the Department for Culture, Media and Sport. The MLA was established in April 2000, following the dissolution of the Museums & Galleries Commission and the Library and Information Commission. The MLA supports libraries, museums and archives through collaboration, policy development, grants, contracts, and funding agreements.

On a national basis, the MLA works on a wide range of initiatives and provides advice and information regarding the digitisation of content. These include Curriculum Online, the Broadband Stakeholder Group, NOF's EnrichUK programme and the Culture Online programme.

8.9 The European Commission

The EU Research and Development Framework Programme (FP6)¹⁰⁷ is a collection of actions at EU level to fund and promote research. FP6 has a budget of €17.5 billion to fund research from 2003 to 2006. The FP6 is made up of seven thematic areas: Citizens and governance in a knowledge-based society, Sustainable development, global change and ecosystems, Food quality and safety, Aeronautics and Space, Nanotechnologies and nanosciences, Knowledge-based multifunctional materials and new production processes and devices, Information society technologies and Life sciences, genomics and biotechnology for health. The Information Society Technologies programme is the most relevant to this study.

It is not clear whether digitisation activities are funded under the IST programme, but some of the IST projects are relevant to the creation of digitised resource and the management of digitised collections. For example, DigiCult involves "monitoring and assessing existing and emerging technologies that provide opportunities to optimise the development, access to, and preservation of Europe's rich cultural and scientific heritage, within the emerging digital cultural economy" and will provide "a roadmap of how cultural heritage technologies will or could develop in the near future"¹⁰⁸. The *DigiCult Newsletter* provides reports of the use of technology in particular digitisation projects. ERPANET focuses on the long-term management of digital

¹⁰⁷ Sixth Framework programme 2002-2006. http://europa.eu.int/comm/research/fp6/index_en.html [accessed 14.12.2004].

¹⁰⁸ DigiCult. <http://www.digicult.info/pages/info.php>, [accessed 6.1.05].



content and is “virtual clearinghouse and knowledge-base on state-of-the-art developments in digital preservation and the transfer of that expertise among individuals and institutions”¹⁰⁹.

8.10 Foundations and Trusts

8.10.1 The Andrew W. Mellon Foundation

The Andrew W Mellon Foundation is a not-for-profit corporation that funds many digitisation projects. Programmes include: museums and arts conservation, scholarly communication, research in information technology and teaching and technology amongst others¹¹⁰. Two of the major projects involving digitisation funded by the Mellon Foundation are JSTOR and ArtSTOR (for further detail see Chapter 7.6). JSTOR is an independent not-for-profit entity creating a trusted digital archive of important scholarly journals, extending access to that archive to as many scholars as possible¹¹¹. ArtSTOR aims to develop, store and distribute electronic digital images and related scholarly materials for the study of art, architecture, and other fields in the humanities projects¹¹².

8.10.2 The Wellcome Trust

The Wellcome Trust is an independent, privately owned charity that funds research to improve human and animal health. The Wellcome Trust library (hosting one of the world’s greatest collections of books, manuscripts, pictures and films on the meaning and history of medicine, from the earliest times to the present day) is involved in many digitisation projects. This includes digitising Wellcome library archives and providing free access, as well as funding digitisation projects. One large scale project is joint funded with JISC, alongside the US National Library of Medicine to digitise around 1.7 million pages of complete back files”¹¹³.

*The National Library of Medicine will manage the project, host the archive and ensure that the digital files are preserved in perpetuity.*¹¹⁴

8.11 Funding Sources Used by UK Libraries and Archives

Thirty-eight respondents indicated their funding sources. These respondents included institutions in the planning stages of digital projects.

¹⁰⁹ ERPANET. <http://www.erpanet.org/about.php>, [accessed 6.1.05].

¹¹⁰ Mellon Programmes. <http://www.mellon.org/MellonPrograms.html> [accessed 1.11.2004].

¹¹¹ Spinella, Michaela. *JSTOR: overview and history*, <http://www.mellon.org/programs/otheractivities/JSTOR/JSTOR.htm>, [n.d.], [accessed 17.11.2004].

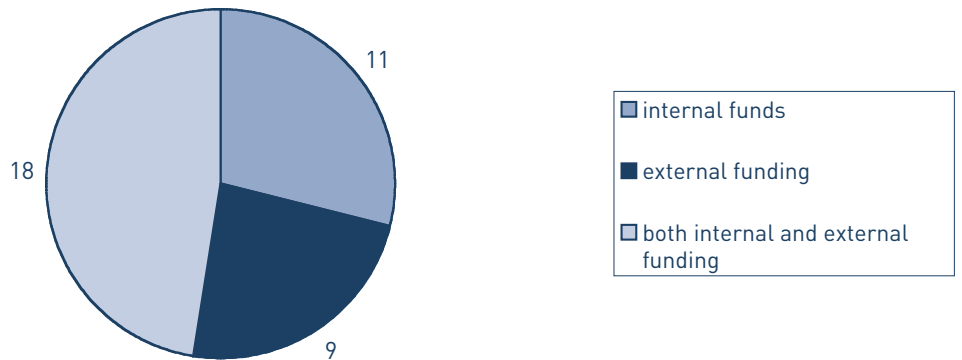
¹¹² Rudenstine, Neil L. & Shulman, James. *ArtSTOR: overview and history*. <http://www.mellon.org/programs/otheractivities/ArtSTOR/ArtSTOR.htm>, [n.d.], [accessed 17.11.2004].

¹¹³ JISC. *Wellcome Trust UK / US Medical Journals*. http://www.jisc.ac.uk/index.cfm?name=project_medical_journals, 30.06.2004, [accessed 17.11.2004].

¹¹⁴ JISC. *Press Release: Archive of medical journals to go online*. http://www.jisc.ac.uk/index.cfm?name=pr_archive_news_280604, 28.06.2004, [accessed 03.11.2004].

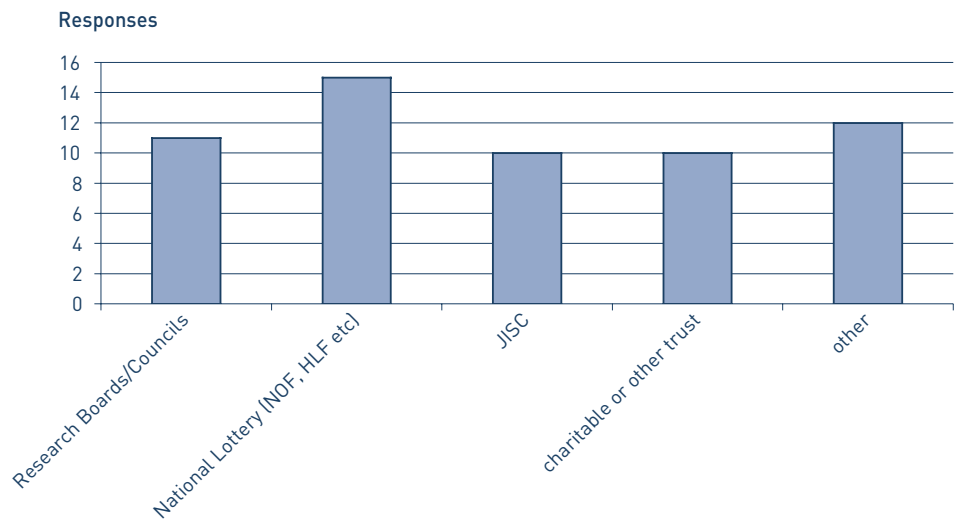


Figure 18
Main funding source(s)



Just under half of the respondents had combined external and internal funding, but this was not the only funding model. Some institutions relied solely on internal funding and others only used external funding.

Figure 19
External Funding Bodies



Twenty-eight respondents, including all twenty-seven that selected external or combined funds from the previous question answered this question. Multiple responses were possible. Public sector funding is most frequent, particularly National Lottery funding. Frequent combinations of funding (frequency in parentheses) are:

- Research Boards/Councils + National Lottery (9)
- National Lottery + JISC (7)
- Research Boards/Councils + National Lottery + JISC (6)

Respondents specified which trusts and other bodies had funded their digitisation efforts.

Other trusts:



- Andrew W. Mellon Foundation
- Catherine Cookson Trust
- Corson bequest
- Getty Foundation
- Hansard Trust (for BOPCRIS)
- Leverhulme
- Pilgrim Trust
- SCRAN
- Wellcome Trust

Other funders:

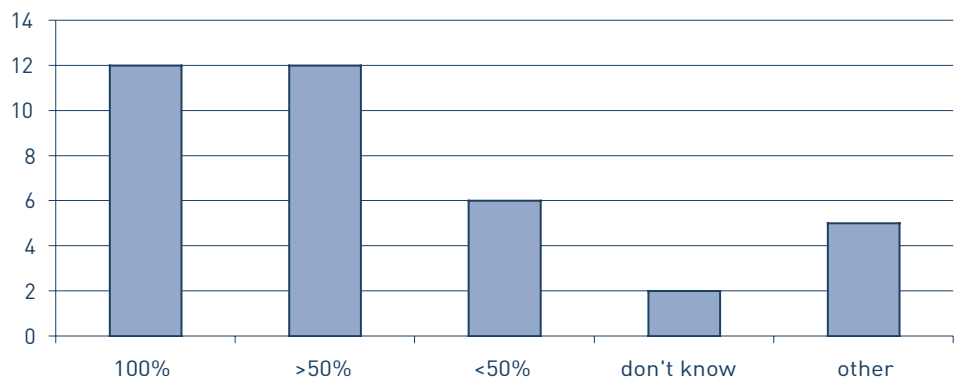
- (anonymous) donors/sponsors
- "external industrial contract"
- British Library
- Commercial partners (3)
- Department of Trade and Industry
- East Midlands Museums Libraries and Archives Council
- Genealogical Society of Utah
- Irish government
- Readers
- Research Support Libraries Programme (2)

One respondent commented "[w]e are a digitisation bureau and make some income. The Digital Library and team form part of Library Services and receive no external grants but we have (and hope to continue) participating as partners in cooperative projects".

Figure 20

Percentage of external funding in "digitisation" budget

Responses





Twenty-six of the twenty-seven respondents that indicated that external funding, alone or combined with internal funds, was the main source of funding (along with two others), responded to a question on the proportion of the digitisation budget made up by external funding. Multiple answers were possible, because proportions would depend on the project and some institutions had undertaken several projects. While many used internal money, for most, external money makes up the bulk of the digitisation budget.

Comments under “other” included the fact that the percentage depended either on the project or on the collection. In one institution, most of the costs are covered by the government, while project partners (and anonymous donations to these) cover some costs. At another, “We obtain contract and project based work from clients who have received funding from a variety of courses. We do a lot of sub-contracted work for HEDS.”

8.12 Funds Spent on Digitisation

The availability of external funding often plays a crucial role in whether digitisation takes place. Funding bodies therefore play a major role in the process of digitisation.

Government money is distributed to the research community directly by allocating funds to institutions and through the research councils (dual support system). The Government funds a significant proportion of the research carried out in the UK. Through the Higher Education Funding Council for England (HEFCE), the Department for Education and Skills (DfES) pays a block grant to UK universities. This funding contributes to the full economic costs of research and teaching and a substantial proportion of university library funding derives from it. Similar arrangements are in place on the other UK home countries.

The Department for Culture, Media and Sport (DCMS) funds the British Library, which is one of the six UK legal deposit libraries, five in the UK and one in Ireland charged with maintaining an archive of all the material published in these countries. It also funds national museums, which conduct their own research and house their own libraries. The Department of Trade and Industry (DTI) supports the UK publishing industry as one of its business support activities.

While significant sums have been spent on digitisation to date, it has proved difficult to obtain figures on what has been spent on a national basis so far.¹¹⁵ It is, however, possible to give an indication by listing a few projects with their overall costs. On a national basis, digitisation work was stimulated by the so-called Follett Report, as a result of which £20 million was set aside for new projects, some of which included digitisation¹¹⁶. The New Opportunities Fund (NOF) contributed £50 million and JISC funding for digitisation was £10 million.

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116 The Electronic Library Programme, known as eLib. For information on the project and its cost see Whitelaw and Joy's *Summative evaluation of phase 3 of the eLib Initiative: Final report summary*. (Whitelaw and Joy 2001).



The Arts and Humanities Research Board (AHRB) claims to have supported ICT related projects with digitisation output to the tune of some £45 million and NOF provided £3.285 million for Collect Britain¹¹⁷ for digitisation costs (this does not include costs for maintenance and access). These projects alone add up to an overall expenditure of £130 million of public money in the last ten years or so.

Various statements suggest that for past projects, the overall project costs exceeded original budgeting.. The NOF project summary states that there was:

Some concern that many projects underestimated the time, effort and expertise required to create the metadata needed to adequately describe digitised material¹¹⁸.

8.13 Funds Received by UK Digitising Institutions

Thirty-four survey respondents indicated how much funding they received for digitisation efforts. Thirty-one of the responses were from institutions that had indicated that they had already digitised material. Ten respondents did not know how much funding their institution had received for projects involving digitisation. An institution based in the Republic of Ireland indicated that it does not receive any funds directly, but its partners do. Another institution has no digitisation budget since digitisation work is included in library traineeships. One university library had received less than “£5k from all sources”. Another could not quantify without extensive explanations, as “internal support of digitisation has enabled a good infrastructure (workshop etc) but includes other functions and objectives (reprography, exhibitions etc)”. Finally, the ADS indicated that it does not engage in digitisation but helps other institutions obtain funding.

Funding received for projects including digitisation elements is summarised in the table below.

Table 10

Funding received for projects including digitisation

Institution	Internal funding (£)	External funding (£)
Cardiff University Library	10,000	35,000
Glasgow University Library	40,000	70,000

¹¹⁷ National Audit Office. *The British Library - providing services beyond the Reading Rooms*. http://www.nao.org.uk/publications/nao_reports/03-04/0304879.pdf, 2004, [accessed 03.09.2004], p. 7.

¹¹⁸ Macgregor, G. and D. Nicholson. NOF-Digi: putting UK culture online. *OCLC Systems and Services*, 2003, 19(3), 96-99.



Institution	Internal funding (£)	External funding (£)
John Rylands University Library, the University of Manchester	100,000	0
Leeds University Library	20,000	150,000
London College of Fashion, University of the Arts London	3,000	155,491
London School of Economics Library	0	200,000
Open University Library & Learning Resources Centre	90,000	500,000
Oxford University Library Services	Confidential	Confidential
School of Oriental and African Studies	0	50,000
Society of Antiquaries of London Library	10,000	30,000
TUC Library Collections	0	260,000
UCEEL	see below	fees for external digitisation services
University College London Library Services	15,000	292,560
University of Aberdeen, Historic Collections	50,000	500,000
University of Bristol Information Services	0	83,000



Institution	Internal funding (£)	External funding (£)
University of Leicester Library	0	335,000
University of Newcastle upon Tyne Library	100,000	217,000
University of Southampton Library	50,000	2,500,000
TOTAL	488,000	5,378,051

UCEEL commented “We received £1.062 Million in 2000 to establish a digital library ... and a digitisation bureau (from HEFCE Capital funding). This ran out in 2002 but the ... team are all integrated as part of Library Services and salaries have never been paid out of either HEFCE or any other funding source (except from RSLP funding in 2000/2001).”

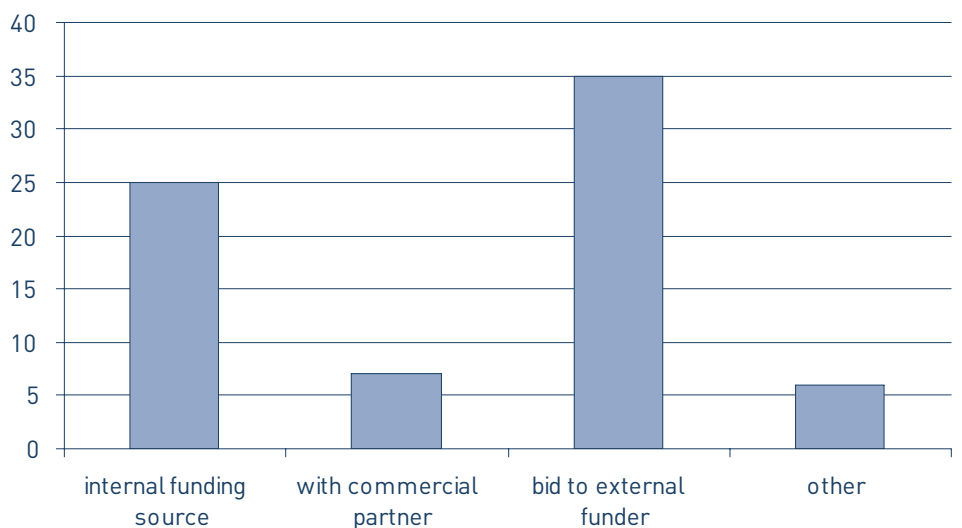
8.14 Funding Sources for Future Digitisation Activities

Survey respondents were asked how they planned to fund future digitisation activities. Forty-one responses were received. Some of these were from respondents who had not indicated they were planning digitisation in the future. Multiple responses were possible. External funding would be sought more often than internal funding but nineteen responses combined internal funding with bids to external funders.

Figure 21

Funding sources for future projects

Responses





Some respondents named possible future funding sources.

Table 11

Future funding sources

AHRB	4
“commercial in confidence”	1
EU	1
Getty	1
HLF	1
JISC	2
Mellon	1
“none identified”	2
Wellcome	1

Comments under “other” were mainly from institutions at the planning stage, hence “to be decided” (4). On the “experienced” side, one institution explained they were “identifying academic and commercial partners, raising funds from donors”.

8.15 Sustaining and Coordinating Digitisation Efforts

A synthesised report of the studies conducted for the JISC and the National Preservation Office on digital preservation stated:

A clear message that emerged from the studies was that a great deal of money can be wasted if digitisation projects are undertaken without due regard to the long-term preservation of the digital files¹¹⁹.

This concern is echoed in the National Audit Office report, which commented on the situation of the British Library:

The library has been successful in finding external funding to convert analogue material into digital formats ... However, the Library will need to find funding to sustain digitisation projects ...in the longer term¹²⁰.

Finally, relating to system and equipment costs, Pann and Higgins concluded that:

¹¹⁹ Feeney M ed. *Digital culture: maximising the nation's investment* 1999. p.7

¹²⁰ NAO *The British Library - providing services beyond the Reading Rooms*. http://www.nao.org.uk/publications/nao_reports/03-04/0304879.pdf, 2004, [accessed 03.09.2004].2004, p. 19.



There is a tendency for each project to produce its own software and systems and it is also notable that...there is a lack of interoperability between the project deliverables¹²¹

These findings suggest that digitisation projects expend funds unnecessarily due to lack of co-ordination. As the 1999 report on 'Scoping the future of the University of Oxford's digital library collections' stated:

Most of the initiatives have been undertaken in isolation, coming up with different answers to the same questions, or suffering from the familiar problem of reinventing the wheel¹²².

The NAO report discusses this:

"There is a risk that different digitisers will adopt different technical standards. There is also a danger that projects develop in isolation or duplicate the work that is carried out by others. [...] in view of the considerable investment of money, resources and human effort involved in digitisation projects it is important that these risks are identified and managed"^{123 124}.

8.15.1 Issues Raised by Funding Bodies

Many funding bodies interviewed felt that projects they funded did not take into account the long-term issues such as preservation and sustainability as well as access to the resources. Therefore when project funding runs out, or when the project finishes, the resources that have been digitised are not managed. Because of this, a number of funding bodies are limiting funding unless digitisation projects factor in sustainability of the resources.

Others stated that it was increasingly difficult to decide where the priorities lie for the digitisation of resources and struggle with establishing strategies to manage priorities.

Another main concern of the funding bodies is decreasing or limited budgets available for the digitisation of material. Though viewed as important, many feel the future of digitisation and digitised resources is precarious because it depends on the limited funding available. This was also a key concern of those that had received funding for digitisation.

¹²¹ Pan, R., and R. Higgins. Digitisation projects at Durham University Library: an overview. *Program*, 2001. 35(4), p. 355.

¹²² Lee. *Scoping the future of the University of Oxford's digital library collections. Final Report*. <http://www.bodley.ox.ac.uk/scoping>, 1999. [accessed 05.09.2004].

¹²³ And it continues to say that "this can be achieved in the major funders of digitisation and major digitisers [...] co-operate [...] in consultation with the sector more broadly" (NAO 2004, p. 19).

¹²⁴ Another related issue here is that of libraries selling access to resources commercially in order to return investment. The British Library's digitisation policy states this as one of the library's aim. It is an important issue and provokes discussion since it puts on the line the fundamental principle of *pro bono publico* of the library sector.



8.15.2 Issues Raised by Those Receiving Funding

A main issue raised by interviewees who had received funds for digitisation was costs. Many commented that there are significant costs associated with digitisation and there is the additional cost of sustainability. Another cost is the need for added functionality of resources to meet the increasing expectations of users. In many cases, both internal and external funding is required for digitisation projects, but many stressed that without significant external funding, digitisation and the management of those digitised resources would not be possible. Interviewees commented that their institutions held many more resources that should be digitised and provided to the research community, but pointed out this could only be if further funding could be secured.

Obviously our funding prescribes to a certain extent how much we can take part in digitisation.

(Funding body)

Digitisation happens when external funding can be secured.

(Library)

A number of interviewees commented that their funding did not come from UK funding bodies, but international foundations. Others had begun fundraising activities to secure funds.

I wish more money would come from UK funding bodies – there should be a structure in place that facilitates more funding being given for larger projects on a strategic level.

(Library)

Part of the problem is the funding co-ordination mechanisms, I think.

(Digitisation Service)

A serious concern for those involved in digitisation projects was the cost of maintaining the resources, and many felt that funding bodies needed to look at their strategies and provide funding for the preservation and maintenance of digitised material.

...the costs of maintaining this stuff is just horrendous and it's growing all the time, and I think that we're also in the next 5 years or so [going to] start losing some of these resources, they're going to disappear.

(Support Service)

8.16 Funding Bodies - Future Plans

Future plans consist of ensuring digitisation projects take into account the preservation and sustainability of resources, ensuring digitised resources are accessible and add value to the appropriate user community, considering how best to serve user needs, and to work on joint funding for larger important



projects they cannot fund alone. One funding body interviewed stressed the need for a needs assessment of digitised material in the UK and felt future funding co-ordination should be strategic. Other funding bodies were concerned about the 'Google' digitisation plans and felt that their future digitisation funding would depend on the amount of digitisation activity assigned to 'Google'.

9 Cooperative Digitisation Activities

There is some evidence of collaboration between higher education institution libraries, learned societies, museums, archives and trusts. In particular, there is a great deal of cooperative activity in Scotland. Prominent examples include the Glasgow Digital Library, a co-operative endeavour of a number of Scottish libraries¹²⁵ establishing a corpus of digital content. It was funded by the Research Support Libraries Programme and was aimed to become self-sufficient in the long-term. It is based at the Centre for Digital Library Research (CDLR) in the University of Strathclyde. The project has apparently been successful. However, there have been problems in the co-ordination and commitment of individual libraries, which could particularly have an impact on long-term maintenance.

Operational libraries [...] to put a kind view on it they have other priorities, so there was a certain amount of suspicion and basically that aspect [of self-sufficiency] never really took off. Now we've still continued to support it and in theory it is still a co-operative venture and most of the effort comes from us. The original funding came from RSLP but during the project we began to bring in smaller bits of money from things like RLS to add digitised collections to the Glasgow Digital Library which gave it shape and form.
(Support Service)

The National Archives is involved in a number of co-operative projects including *Moving Here*. *Moving Here* is an online service on migration to the UK over the last 200 years and involves fifty partners in total, covering libraries, museums and archives. It was originally funded by the New Opportunities Fund (NOF) and is receiving follow-up funding from the Heritage Lottery Fund (HLF)¹²⁶. As a condition of this funding it will remain free until 2010. The service provides about two hundred thousand digital objects, including audio, video, maps, pictures, and image material. A representative of the National Archives says that it is a very successful service and will be expanded.

¹²⁵ Glasgow Caledonian University, Glasgow City Libraries and Archives, Glasgow Colleges Group, University of Glasgow, University of Strathclyde.

¹²⁶ HLF funding is just under three quarters of a million pound and is given in order to expand *Moving Here* to be able to include educational, curriculum based content.



The Scottish Cultural Resources Access Network (SCRAN) appears to be a successful model of co-operation in the public sector. SCRAN is a charity financed primarily by the Scottish Executive. It is a service for libraries and schools in Scotland and provides educational access to digital materials representing Scottish material culture and history. A representative of SCRAN says that it has co-operated with 450 institutions in the UK, including libraries, museums and archives, as well as galleries and some media organisations. SCRAN acts principally as a standards centre, a funder, a project manager, and a host for material. “We give the provision of tools to use the material.” SCRAN acts as a network; digitisation is done by the participating institution. Access to material is chargeable. SCRAN are currently developing further tools.

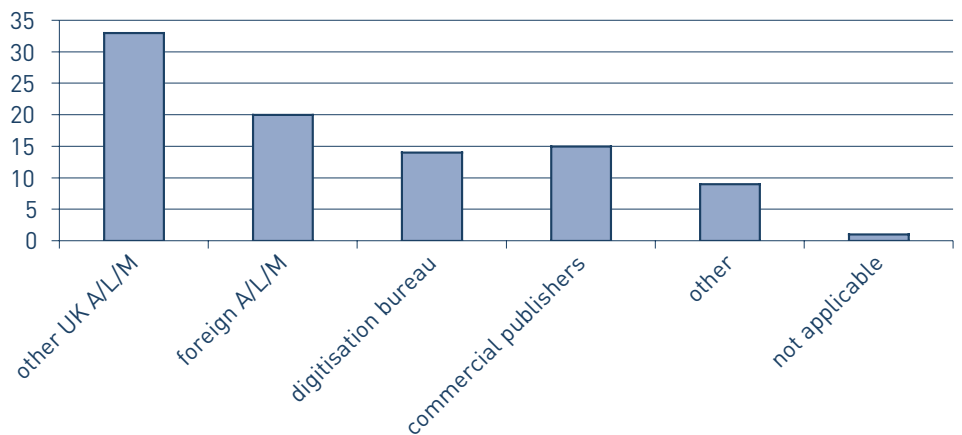
9.1 Survey Respondents’ Cooperative Activities

Thirty-nine survey respondents responded to a question on cooperative digitisation activities. Four of these had already indicated they had not, up until now, actually carried out any digitisation. A majority (twenty respondents or 56%) has been involved in cooperative activities, seventeen respondents have not. Twenty-one institutions were interested in cooperation.

Figure 22

What partners would you work or have you worked with?

Responses



(A/L/M = archive/library/museum)

This question was intended for digitisers and institutions in the advanced planning stages. Thirty-seven respondents answered a question on cooperation partners. Multiple answers were possible. Other UK and overseas libraries, museums and archives were the preferred partners. Some respondents had used digitisation bureaux and cooperated with commercial publishers. Few respondents provided additional details about partners. Those that did mentioned Library/archive:

- Lambeth Palace Library

Specialist technical experts:



- Institute for Learning and Research Technology (ILRT)
- Manchester Computing
- CDLR
- ADS
- HERON
- Commercial publishers:
- Adam Matthew Publication
- Ad Fontes
- Gale
- Octavo (2)
- ProQuest

Other:

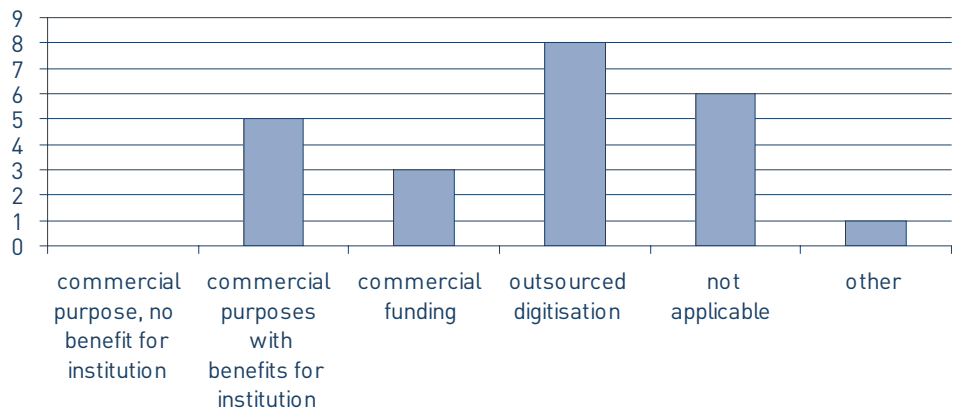
- Trades Union Congress and National Pensioners Convention
- Genealogical Society of Utah
- National Heritage Societies
- Learned Societies

One respondent stated that they were interested in potentially any collaboration. Another respondent was not sure whether to reply to this question as the institution offered a comprehensive digitisation service.

Figure 23

Nature of collaboration with commercial partners

Responses



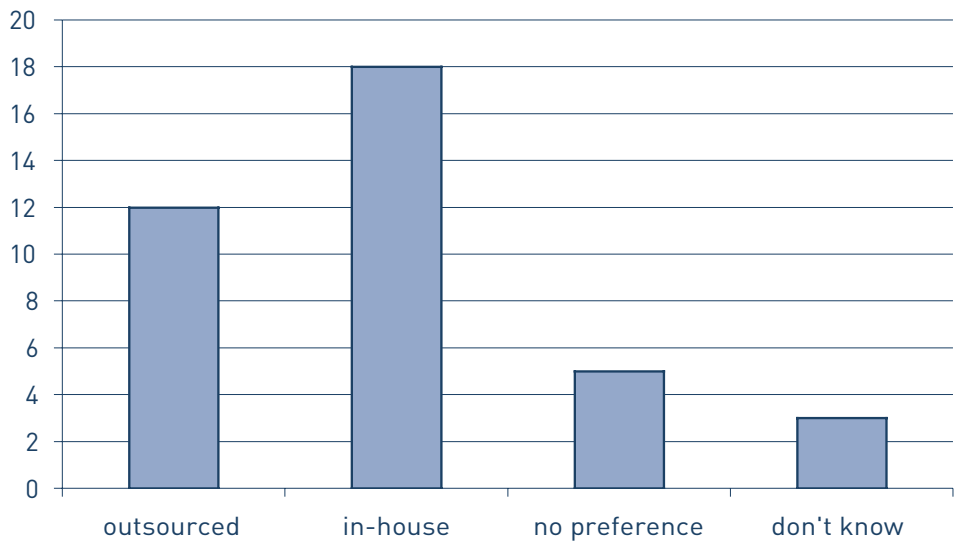
Nineteen respondents provided information on their commercial partners. Multiple responses were possible. The most frequent commercial collaboration is outsourced digitisation. One respondent commented that the nature of collaboration varied from project to project. It makes sense that no institution took part in a venture where nothing would be gained.



Figure 24

In-house versus outsourced digitisation

Responses



Respondents were asked an explicit question on whether they carried out digitisation in-house or whether they outsourced this activity. Thirty-seven respondents answered this question. When asked for reasons for these decisions, the following were given.

Table 12

Reasons outsourcing or digitising in-house

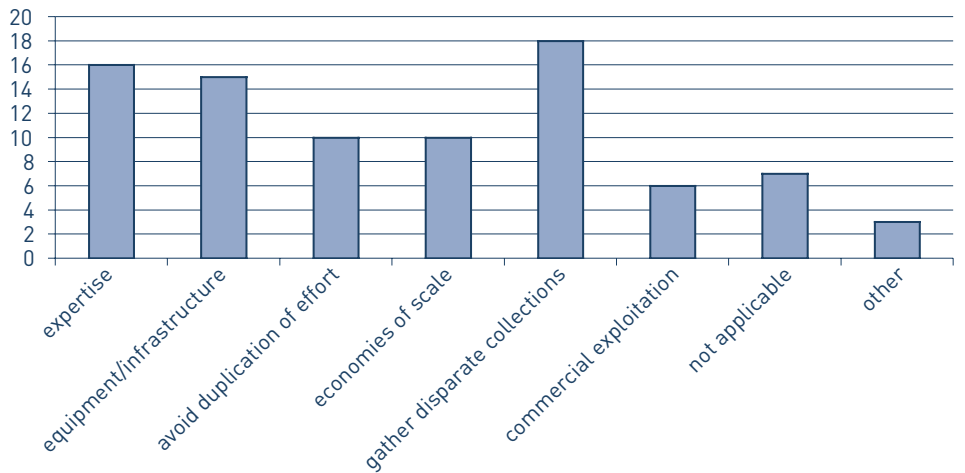
Reasons given in favour of outsourcing	Reasons given in favour of in-house digitisation
<ul style="list-style-type: none"> Lack of ■ equipment (4) ■ staff/time (3) ■ expertise (3) ■ space (1) ■ resources for copyright clearance (1) ■ money (“If we have more than 100 items, it is more cost effective and efficient to use external agency”) 	<ul style="list-style-type: none"> ■ better control of procedures, handling of the originals or quality (5) ■ they preferred or were required to keep the originals on-site (4) ■ cost (4) ■ develop staff skills (3) ■ small-scale project (2) ■ presence of internal expertise (2) and facilities (2) ■ “weed out duplicate material prior to digitisation” (1)

Cost is a factor for in these decisions; this may be depend on the materials to be digitised.

Figure 25

Reasons for cooperation

Responses



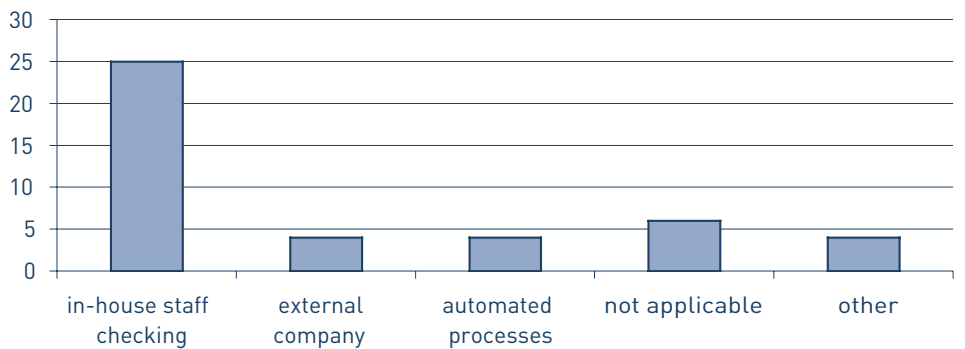
This question was aimed at digitisers that had cooperated and received thirty-three responses. Multiple answers were possible here. (The structure of the questionnaire did not prohibit answers from respondents who had not actually been involved in cooperative activities). The most frequent reason given for cooperating was building virtual collections from dispersed materials, followed by sharing expertise and infrastructure.

Some funders (two respondents) required that the project be collaborative in order to be eligible for support. In one case, the cooperation was seen as a means to achieve wider dissemination of the project results. The seven “not applicable” responses came from institutions that only had “solitary” digitisation experiences.

Figure 26

Quality control procedure in collaborative projects

Responses



A question on quality control procedures received thirty-four responses. Nineteen came from respondents who had already cooperated and fourteen from other respondents. Multiple responses were possible. Most of the respondents relied on in-house checking, although some did use external companies and automated checking. “Other” replies were varied. In one



instance, quality was controlled by project partners, as the respondent's institution acted as content provider only. In addition to in-house checking and automated control, the ADS relies on "user reportage" to detect remaining flaws. The six "not applicable" responses came from institutions that only had "solitary" digitisation experience.

9.2 Collaboration with Publishers

Publishers are also actively involved in the digitisation of backlists (e.g., Taylor & Francis, Reed Elsevier and Routledge) and some are involved in collaborative projects with others. This section briefly discusses prominent collaborative digitisation initiatives that involve publishers.

9.2.1 Royal Society of Chemistry (RSC)

The UK Royal Society of Chemistry has digitised its entire archive of 210,000 journal articles published between 1841 and 1996¹²⁷. The RSC is working with JISC to provide the UK higher education community with access, either through local hosting or via the RSC's interface¹²⁸. Without the collaboration with JISC, subscribing to the digital archive would have cost individual institutions £25,000. Higher education institutions have access to the content through two options f. Institutions can sign up for a three year access agreement via the RSC's own network through a JISC banded-fee system, or institutions can mount the society's archive on their own network for a one-off fee of £50.¹²⁹

Some of the largest projects are currently being developed in the commercial sector. The Early English Books Online (EEBO)¹³⁰ and Eighteenth Century Collections Online (ECCO)¹³¹ projects are examples of such co-operation.

9.2.2 Eighteenth Century Collections Online (ECCO)

The Eighteenth Century Collections Online (ECCO) is a digital library service offered by the publisher Thomson Gale. The comprehensive digital library of 140,000 UK eighteenth century titles and editions is based on Thomson Gale's microfilm library, *The Eighteenth Century*, and is supported by catalogue records from the English Short-Title Catalogue. From the literature, it looks like at least some of the microfilms were produced from material in library collections. JISC is considering a licensing agreement with Thomson Gale in response to requests from UK higher education academics and libraries. Access to the content would be free at the point of use, with institutions paying an annual access fee for a minimum of three years. The fees vary according to the JISC banded system.¹³² Such an agreement would considerably lower the cost for individual institutions.

¹²⁷ RSC Journals Archive <http://www.rsc.org/is/journals/retrodigitisation.htm> 2004, [accessed 10.11.2004]

¹²⁸ Latest Collection News http://www.jisc.ac.uk/collections_latest_news_he.html 2004, [accessed 10.11.2004]

¹²⁹ Royal Society of Chemistry Journals Archive http://www.jisc.ac.uk/coll_rscarchive.html 2004, [accessed 10.11.2004]

¹³⁰ What is Early English Books Online <http://eebo.chadwyck.com/marketing/about.htm> 2004, [accessed 11.11.2004]

¹³¹ Eighteenth Century Collections Online <http://www.gale.com/EighteenthCentury/> [accessed 11.11.2004]

¹³² JISC. *Eighteenth Century Collections Online*. 2004, http://www.galeuk.com/jiscconsult/pdfs/jisc_ecco_proposal.pdf [accessed 16.11.2004]



If individual institutions were to purchase the digitised images directly from Thomson Gale, the cost would be around £315,000 per institution for the content alone (with some concessions for holders of the C18th microfilm collection or consortia). In addition to the fee for the content institutions would also have to pay the annual access fee. ¹³³

9.2.3 Early English Books Online (EEBO)

Early English Books Online (EEBO) is a collection hosted by ProQuest containing approximately 100,000 of the over 125,000 titles listed in Pollard & Redgrave's *Short-Title Catalogue (1475-1640)* and Wing's *Short-Title Catalogue (1641-1700)* and their revised editions, as well as the *Thomason Tracts (1640-1661)* collection and the *Early English Books Tract Supplement*.¹³⁴ JISC is working to create searchable text editions through a collaboration called the Text Creation Partnership.

9.2.4 Text Creation Partnership

In support of both ECCO and EEBO, the Text Creation Partnership is a collaborative initiative based at the University of Michigan. Partners include a number of libraries and commercial scholarly publishers including the University of Oxford, the Council on Library and Information Resources (CLIR), Gale Thomson and ProQuest Information and Learning. The partnership is creating structured SGML/XML text editions for a significant portion of the Short Title Catalog of Early English books¹³⁵. ProQuest has created digital images for 125,000 books and the project aims to create 25,000 searchable and readable editions that link immediately to the corresponding ProQuest image files. As of July 2004, the Text Creation Partnership has created 6,000 fully searchable text files, which are now fully integrated and searchable within EEBO and are freely available to subscribers of EEBO.¹³⁶

Libraries can join the partnership if they purchase Early English Books Online by contributing annually over five years, with ProQuest matching a portion of each contribution. The participating institutions can help to shape the full-text archive, have access to the text archive for customisation and development and have remote access for those developing local systems. The partnership values extensive input from the library community and believes it:

Provides a model for partnerships between publishers and libraries to serve a common goal: meeting the research needs of end users. ¹³⁷

¹³³ JISC. *Eighteenth Century Collections Online*. 2004, http://www.galeuk.com/jiscconsult/pdfs/jisc_ecco_proposal.pdf [accessed 16.11.2004]

¹³⁴ *What is Early English Books Online*. 2004, <http://eebo.chadwyck.com/marketing/about.htm> [accessed 12.11.2004]

¹³⁵ *What is Early English Books Online*. 2004, <http://eebo.chadwyck.com/marketing/about.htm> [accessed 12.11.2004]

¹³⁶ *Text Creation Partnership*. <http://www.lib.umich.edu/tcp/> [accessed 16.11.2004]

¹³⁷ *What is Early English Books Online*. 2004, <http://eebo.chadwyck.com/marketing/about.htm#top> [accessed 12.11.2004]



9.2.5 Medical Journals Backfiles

JISC and the Wellcome Trust, in collaboration with the National Library of Medicine in the United States, jointly fund the Medical Journals Backfiles Digitisation project. The collection includes a number of medical journals from commercial publishers. The aim is to digitise around 1.7 million pages of complete back files worth £1.25 million to be made available as ready with the complete collection available early 2006¹³⁸. The project will be completed at the end of 2006. The digitised material will be made available via PubMedCentral¹³⁹ with free access online. It looks like the majority of participating publishers are scholarly societies or publishing on behalf of scholarly societies (and therefore probably not acquiring copyright on the content), which may explain why access can be provided for free. On the other hand, the RSC does charge for access to its journal back files.

9.2.6 JSTOR

Created by the Andrew W. Mellon Foundation, JSTOR was established as an independent not-for-profit organisation in 1995. Involving many international higher education institutions and a large number of scholarly, society and commercial publishers as participants, JSTOR provides online access to a central repository of digitised back issues of journals. There are currently 449 titles available in the collection from over 230 publishers.¹⁴⁰ Access to JSTOR in the UK is through the MIMAS server in Manchester, with institutions accessing the collection using the ATHENS system. Access to the collection is based on annual fees.

Publisher interviewees said they had a “wait and see” policy with regard to JSTOR. They said that they were awaiting future results of the project and would withdraw from the agreement if it looked as if JSTOR was becoming too successful.

I really don't know where that's going, of course. I mean if JSTOR really took off, then I think we'd have to reconsider our position. I mean we've basically given away all of our content to that, they undertake to pay all the costs.

(Publisher)

9.3 Costs and Benefits of Collaboration

At present, a small number of publishers are collaborating with higher education institutions, libraries, museums, archives, trusts and learned societies. A number of publishers are working with JISC to make their digitised collections available to the HE community at an affordable price (including the Royal Society of Chemistry and Thomson Gale), other publishers are involved in the Text Creation Partnership working on creating structured SGML/XML text editions (including ProQuest and Thomson Gale), while other publishers are

¹³⁸ Medical Journals Backfiles Digitization Project. 2004, <http://library.wellcome.ac.uk/node280.html> [accessed 16.11.2004]

¹³⁹ A Free Archive of Life Science Journals. 2004, <http://www.pubmedcentral.gov/> [accessed 16.11.2004]

¹⁴⁰ About JSTOR. 2004, <http://www.jstor.org/about/> [accessed 16.11.2004]



allowing projects such as JSTOR (from the Andrew W. Mellon Foundation) and Medical Journals Backfiles (from The Wellcome Trust, JISC and the National Library of medicine in the US) to digitise their journal archives and offer these to the HE community.

The higher education community is benefiting from publishers providing their content in digital form and the need for and value of collaboration in the digital age is widely accepted and recognised. The most recent indication is the report of the National Audit Office on the British Library, which says:

The library and information sector faces a number of challenging issues in the electronic era (for example digitisation, digital preservation and the opportunities these give to make material accessible to all). Many of these will need to be addressed through collaboration and a joint approach to common issues.¹⁴¹

While collaboration in digitisation helps minimise duplication, economise on cost, and the definition and adoption of standards, the choice of material and the standards applied continues to vary according to projects.

The question of the relative costs and benefits to research libraries and archives and publishers was explored in interviews. Library views of their relationship with commercial players varied greatly. There is some common understanding of what commercial companies contribute: initiative, funds, expertise, and equipment. There are examples of how this is exploited successfully, for example EEBO, ECCO and the TCP as outlined above. All interviewees involved in these projects were asked whether there were any negative aspects. The only negative aspect identified was the issue of restricted access. Interviewees understand that the projects are successful in both co-operation and delivering content to the research community. The Text Creation Partnership (TCP) is particularly seen as a successful new model of co-operation since it involves all stakeholders: the research community, the librarian and the publisher.

I find that fascinating I must say, as a model really between the community, the libraries, the publishers and the researchers themselves that are involved.

(Publisher)

Well I think it's a very good model... because it is by the community and for the community and it means that academic requirements can be fed in directly and not mediated through a commercial partner.

(Publisher)

¹⁴¹ NAO 2004, p. 10 National Audit Office (NAO),. *The British Library - Providing services beyond the Reading Rooms*. 2004 http://www.nao.org.uk/publications/nao_reports/03-04/0304879.pdf, [accessed 03.09.2004].



The benefits to libraries in all of these projects is the ability to provide access to large quantities of high quality digitised research material selected and digitised to standards required by the community. It is additionally a benefit to have material from the library's own collection digitised free of charge. The limiting factor to the overall success of these projects is pricing. Both EEBO and ECCO are hugely expensive resources and libraries, or JISC for the libraries, find it increasingly difficult to afford the subscriptions.

There is a concern within libraries relating to commercial players digitising content and then selling it back to libraries which strain budgets. CURL wants to avoid another EEBO but want to identify next big collections.

(Librarian)

One of our difficulties is that the major publishers, like ProQuest and Gale have soaked up the major collections in 15-16-18th century, which we increasingly find difficult to afford. We did have a special relationship with ProQuest due to the amount of material that went into EEBO but the 18th century is more difficult and it would be a great pity if that trend continued. What I would like to see is that JISC took a broader view on what [inaudible] because in the end JISC is faced with the demandable bill and with at least the liability for these major collections. And it is difficult to see how this can be sustained.

(Librarian)

Other resources are also considered expensive.

An example I was always able to cite of this was The Lancet backfiles, which this library subscribes to and I had a bit of a problem signing up to that because it was expensive, we paid a lot of money for it, I can't remember exactly how much it was, but it was in the region of £40- 50,000 for The Lancet backfiles.

(Library)

A representative of one of the funding bodies expressed a similar view on paying for access to content.

We've found that we need to pay one hundred and fifty thousand pounds a year subscription fee to access these databases, which we get really cross, so something like that we do monitor financially, but it's harder to monitor that sort of thing.

(Funding body)

One interviewee provided another example of exploiting the commercial sector with commercial organisations (though not publishers in the strict sense) relating to census material in which companies:



...pay for the development and the operational running of the service and charge an e-commerce charge" (NA). The National Archives benefit from the services the company offers both to them and to the user of the archive in terms of providing access to material without incurring expenditure.

(Archive)

A commercial partnership that we set up was with myfamily.com, which are a very big family history [concern] online. And they run the ancestry.com and ancestry.co.uk site, and we launched our co-branded service in December last year with them for the 1891 and 1881 census and they have got a licence with us to make [odd] censuses back to 1841, but not obviously 1901, available through this broadband [inaudible] and we receive a royalty fee from traffic that's driven from our site to their site, and obviously we will use that money to help develop our online services.

(Archive)

A more recently announced collaboration is Google's mass digitisation project. The plan is to collaborate with major US libraries and the Bodleian Library in Oxford.

Interviewees agreed that it remained to be seen what Google will deliver and how it will turn out to influence traditional roles in the information sector. In summary, libraries we interviewed have accepted the news as positive since they will benefit from substantial amounts of digitised content from renowned libraries. A number of libraries we spoke to said they were aspiring to be part of the Google deal. Publishers on the other hand have received the news with much more scepticism since it will undermine the business sector model of delivering and charging for digitised content.

I do think the Google initiative is almost certainly going to stop a number of commercial initiatives to digitise historic materials. Now I'm sure there are some librarians who would argue that that's a very good thing, I'm really not sure of it because I think it will mean that some digitisation of historic materials is not done, ever, to a decent standard, but because Google has done it to a low standard they will have ruined the market for anybody who would have wanted to do it to a higher standard. And maybe the academic community thinks that it can take what Google is doing and add further value to it, in fact I can think of some people who would say they would do that, but I do think commercial publishers bring something to the whole enterprise and have been able in the past, certainly at ProQuest and [inaudible], to identify projects and to do them to a standard that the academic community could never have achieved because it cannot take the risks with public money that a private company can take with its own money. So I do feel that some projects will never get done to the standards they deserve because of this wholesale and completely undiscerning approach that Google appears to be taking.

(Publisher)



The immediate outcome is that it is rather disruptive, rather than conquering. I would think it likely that publishers such as ourselves, ProQuest and others will be cautious about initiating future projects which are basically composed of the unadorned digital monograph. That would seem Google's initiative would seem to me to have sown enough doubt in the minds of certainly purchasing libraries, to make it unlikely they could enthusiastic about straightforward monograph conversion projects, for as long as the Google initiative is up and running and seen to be successful.

(Publisher)

9.4 Roles and Responsibilities in Digitisation and Business Models

This study uncovered some evidence of uncertainty among stakeholders about the distribution of roles and responsibilities. The different digitisation projects investigated showed a great deal of variety in the way they were organised.

Some examples include:

- The National Library of Wales is committed to digitisation. It has delivered various digitisation projects over the past years¹⁴². The NLW selects, provides primary material, produces, pays for, delivers, maintains and archives digitised material. Material is offered free to the constituent community. The NLW has expertise, staff (full time on all levels including metadata creation), initiative, content and funds.
- Whereas, The British Library has carried out some digitisation projects in the past and is positively inclined towards the digitisation of more of its content. However, the BL does not now fund digitisation from internal funds. Digitisation only takes place if external funding can be secured. The BL is co-operating with a large number of other libraries, archives, and commercial companies in relation to digitising content¹⁴³. According to a BL representative interviewed for this study, the BL sees its role as content *provider* rather than a digital service provider. The BL can select, produce and deliver digital content. The BL's Digital Object Management system should provide the means for maintenance and archiving. However, the BL has been trying to develop such a system for a number of years now, so it may still be some time before this is in place. It does not fund digitisation and, to a lesser extent, show initiative. The BL has the content but little interest in undertaking digitisation using its own resources.
- Commercial companies like ProQuest work on the basis of profitability. ProQuest is a digitisation company that selects, produces, maintains and funds digital content. It does not archive material. ProQuest has expertise, staff, funds and initiative, but it does not have content.

¹⁴² Here as in subsequent examples: pls. refer to the list of collections in chapter 3 for details on what has been digitised.

¹⁴³ The BL has manager in house that is looking at relationships with commercial activities (Interview with Aly Conteh).



- JISC/Wellcome Trust/National Library of Medicine have embarked on a large project to jointly fund, select, produce, maintain, and archive *Medical Journal Backfiles*. The three bodies together brought to the table initiative, expertise and funds. The group only contributes content to a limited extent, this will come mainly from publishers:

but it's also the publisher because the publisher is key to this, if they don't buy this Faustian bargain then it doesn't happen.

(Funding body)

These examples show some signs of change in the tradition roles of libraries and publishers. Whilst the NLW sees itself as a more or less self-sufficient content and service provider, the BL takes on a rather passive role providing source material for digitisation projects. So the NLW could be seen as competition as it becomes a secondary publisher. The BL becomes a content provider, rather than just a repository. There is a question of whether it is the library's role to digitise, or whether its role is to select material for digitisation and then make the digitised content accessible. There is also the question of whether libraries should be paying for the digitised versions of content they, or other libraries, already have in their collections. Publishers who define their role as serving the research community¹⁴⁴ are challenged by emerging new models. As a representative of a funding body put it:

Libraries will work increasingly with companies such as Google, Microsoft etc in digitising and providing content and will need to rethink strategies, focusing more vigorously on their special collections and how to describe their material – in whatever format is required. Publishers will also need to rethink their strategies and retool their operations to produce material in different formats, and also to manage that material.

(Funding body)

This fact was reflected in the interviews with commercial partners who are aware of their need to change. For example:

We also see that the environment has changed and that we need to work more collaboratively with the research community and with the JISC in order to identify what the projects are, what the content is, that that community needs. And also to understand the models, the financial and commercial models which are going to be used to provide the content.

(Publisher)

At least some funding bodies are trying to find new ways of supporting research provision by strategically funding digitisation activities. The *Medical Backfile* project mentioned above is one example of this:

¹⁴⁴ For example, Publisher I would say as a publisher we have an obligation to the academic research community to provide information in the best format we can. Another publisher understands its role as follows: We have an important role in providing materials for scholarship and research. We see that as being a very large part of our job, our function. ... I think that in 2010 we will be more of a publisher than ever before in the sense that we will be bringing to bear some of the skills that may be more traditionally associated with the print publishing world, editorial skills, organisational skills, the mediation of content and the contextualisation of content.



So we're trying to encourage open access and we're tackling it from both ends, we want the current stuff which we're funding particularly, to be available, but we also recognise we want the archive to be available, and I think it is only a token gesture but we believe that this should be available and I suppose it's our attempt to say well let's not leave it entirely to the private sector to digitise and charge us back for it... We believe that libraries have traditionally looked after archiving and obviously it costs money, but this was an attempt to show that perhaps this could work collaboratively, we can actually do this ourselves, we don't always have to rely on the private sector to do this for us.

(Funding body)

The JISC understands its role as being “both in the creation of content but also in the sustainability of content”. The JISC’s strategy for funding allocation includes:

- create a small number of large scale projects for digital collections for the use and reuse by education that would not be possible without assistance
- work collaboratively with organisations in the UK and abroad to build a collection of digital surrogates that apply to the common information environment requirements and standards

The JISC has commissioned this study in order to support its aims to determine its future activities:

We would really like an outline strategy for national digitisation, and how things can be linked, there is a schism in the public sector whereby DCMS and DFES have different constituents but at the end of the day the end user isn't bothered about where the money comes from they just want access to difficult to access collections.

Another funding body has been greatly supportive of digitisation activities.

...will help libraries, institutions and publishers as they identify needs and priorities and change business practice – all will require substantial assistance.

(Librarian)

One of our interviewees mentioned that recent discussions with a funding body have shown that the body is interested in supporting activities furthering the Google digitisation initiative. The funding body has an interest in ensuring the content is being developed, maintained and used. While it is still in its infancy, the Google initiative is having an impact on business models and research library interest in digitisation.



9.4.1 Business Models

Interviewees were asked their views on business models for digitisation. Some of their responses are included in section 3.2.5. They commented that there is a wide variety. Models vary according to domain and whether the provider is a commercial service, not-for-profit, works on an open access model, or provides content with another stakeholder or funding body.

Models involve partnerships and collaboration, or are decided on after collaboration with the library or user community. All interviewees mentioned some level of collaboration in the creation of successful business models. Others mentioned that there is no standard model.

It depends on the collection and the type of partnership. We actually have a manager in-house that is looking at relationships with commercial activities.

(Library)

Commercial publishers need make money through their operations, and this usually means charging for services provided. All publishers interviewed said they worked with the library community to develop a successful model. Models included:

- Purchase model with an access agreement (Gale)
- Collections sold on a subscription basis to library consortia, pay per view for individuals (Sage)
- Backfiles of journals from publishers offered via subscription to the library community. Price negotiated to the market's satisfaction.
- Print subscriptions with online and back files (digitised) free (for example Oxford University Press)
- Usage-based model (Taylor & Francis – digitised journal back files)
- A commercial publisher hosts the digitised collection and works alongside The Text Creation Partnership which involves a number of HEIs. Searchable and readable editions link to corresponding ProQuest image files at a subsidised cost by the publisher, these texts are then available to the publisher for a specific length of time before being made freely available. (EEBO - Gale)

A number of models operate on a not for profit basis. These models vary greatly in how they operate and what they provide.

- Subsidised annual licences for local hosting material, with charges for other services (OCLC).
- Funding received from a body or trust for the digitisation of material which is then to be made freely available as a condition of funding (Wellcome).



- A lease model where all backfiles can be accessed for a fee. Three types of access are offered: purchase the backfiles and access them on own server for a one-off fee, purchase the rights to have content but an extra fee for Society to maintain access to the server, and a lease fee as well which is for a year for access (Royal Society of Chemistry - “We had to make sure there was a business model as we couldn’t afford to digitise it and give it away for free”)
- Commissioner and facilitator that acts principally as a standards centre, a funder/fund raiser, a project manager, a host for material, and provide of access and use tools. Organisation does not claim copyright in digitised material. Access rights for educational use are negotiated. Digitisation is out-sourced or done by the organisation that holds the material. (SCRAN)
- A collaborative venture involving many international higher education institutions and a large number of scholarly, society and commercial publisher. Provides online access to a central repository of digitised back issues of journals, publishers give backfiles of journals for digitisation. Access to the collection is based on annual fees on a cost recovery basis. Recently, however a small revenue sharing scheme for the publishers involved has been introduced (JSTOR).
- Recipients of funding or organisations working in partnership with the funding body required to provide free access (Funding bodies).

It is likely that the most acceptable models for the research sector involve access free at the point of use or affordable subscriptions. It seems appropriate that the products of digitisation funded by public bodies such as research councils or academic libraries should be freely accessible. On the other hand, private sector funding of digitisation would save scarce public resources. However, publishers have to recoup, at the least, their costs in some way. Access embargo models, such as JSTOR or the Journal Backfiles Project, may be acceptable to publishers, but they seem to be cautious about these at the moment. The SCRAN model is an interesting one that could be explored further.

10 Strategic Initiatives

The UK Government has made available large sums of money to initiate, maintain and support ICT innovations for the benefit of the research community. Where a national dimension exists, the HE Funding Councils have set up joint subcommittees to deal with particular issues. These include JISC, which is committed to continuing its central role in providing a world-class infrastructure and promoting innovation through development programmes for the community. Other strategic initiatives in the use of ICT to support research include the e-Science Programme and the AHRB's new ICT Strategy Projects Scheme.

At the same time, there have been moves towards cooperation between academic and other research organisations, including research libraries. This includes JISC, national libraries and other research institutes working together. Finally, there has also been much activity focused on the provision of infrastructure and content with the research sector. While the target audience for the content is not researchers, at least some of this content could be of use to the research sector.

This section briefly describes the most prominent strategic infrastructure and content creation initiatives in the UK over the last few years.

10.1 The information environment (IE)

http://www.jisc.ac.uk/index.cfm?name=about_info_env

The IE is an ambitious JISC project that integrates features of the Distributed National Electronic Resource (DNER), which was withdrawn in 2002. The new initiative aims to provide an overall solution within the HE and FE sectors by developing a "robust and appropriate platform to provide access for educational content for learning, teaching and research purposes" and "build[ing] an on-line information environment providing secure and convenient access to a comprehensive collection of scholarly and educational material"¹⁴⁵. It aims to

¹⁴⁵ Ingram, C. JISC development, *Vine*, 126, 2002, 3-6.



be nationally and internationally involved and recognises that standards for creation, access, use, preservation and moreover interoperability or networked resources are key.

10.2 UK e-Science Programme

<http://www.rcuk.ac.uk/escience/>

This programme has been running since November 2000. It consists of a Core e-Science Programme, and individual Research Council programmes. The core programme is funded by the Office of Science and Technology (OST) and the Department of Trade and Industry (DTI), and is managed by the Engineering and Physical Sciences Research Council (EPSRC) on behalf of all the Research Councils. The individual Research Council programmes run in conjunction with other bodies, e.g. JISC. The goal of the Core e-Science Programme is “to develop and broker generic technology solutions and generic middleware to enable e-Science and form the basis for new commercial e-business software.”¹⁴⁶

E-Science is “large scale science that will increasingly be carried out through distributed global collaborations enabled by the Internet.”¹⁴⁷ It will rely on grid computing, which takes the concept of the Internet one stage further to allow seamless access and use of computing power as well as data. The Grid is an architecture proposed to enable virtual organisations: “an infrastructure that enables flexible, secure, coordinated resource sharing among dynamic collections of individuals, institutions and resources”¹⁴⁸. In the UK, the JANET research network provides the physical links between British institutions and connections to European, American and Japanese research networks. Currently, there is no satisfactory middleware to manage access control and resource and bandwidth brokering. The Core Programme has entered its second phase, which included the launches of the Digital Curation Centre, which aims to provide support to life-cycle management of digital materials, and of the Open Middleware Infrastructure Institute (OMII), which aims to produce adequate middleware.

10.3 AHRB ICT Strategy Projects Scheme

http://www.ahrb.ac.uk/apply/research/strategicinitiatives/ict/ict_strategy_projects_scheme.asp

¹⁴⁶ About the UK e-Science Programme. <http://www.rcuk.ac.uk/escience/>, 02.12.2004, [accessed 03.12.2004].

¹⁴⁷ About the UK e-Science programme. <http://www.rcuk.ac.uk/escience/>, 02.12.2004, [accessed 02.12.2004].

¹⁴⁸ About the UK e-Science programme. <http://www.rcuk.ac.uk/escience/>, 02.12.2004, [accessed 02.12.2004].



The AHRB has launched a £2.5 million ICT strategic programme. Its aim is “to encourage, support and enhance the use of Information and Communications Technology (ICT) in all areas of arts and humanities research”¹⁴⁹. One million pounds has been earmarked for the ICT Strategy Projects scheme, which will fund projects in two areas: “knowledge gathering” and “resource development”¹⁵⁰. These projects should “promote, support, and/or enhance the use of ICT in research across a range of subjects within the domain.”¹⁵¹ Projects in the first area are likely to be surveys of “the current state of ICT-related activity in UK arts and humanities research, the ICT requirements of the relevant research communities, and the opportunities, needs and prospects for new ICT developments”¹⁵² that would inform the Strategic Review planned for 2006¹⁵³. The second group of projects should “enhance the general capacity, potential and infrastructure of research in the arts and humanities in the UK and raise the profile of ICT-based research methods and outputs.”¹⁵⁴ The projects should start between 1 July and 1 December 2005¹⁵⁵.

10.4 The Research Support Libraries Group (RSLG) and Programme (RSLP)

<http://www.rslg.ac.uk>

The 2002 House of Commons Education and Skills Committee report on library resources for higher education welcomed the role of the Research Support Libraries Group (RSLG) in the development of an appropriate strategy, and expressed concern that previous studies of library provision for higher education had not resulted in the implementation of a national strategy.¹⁵⁶

The RSLG was an advisory body established by the four HE funding bodies and the three national libraries with the purpose of developing a national strategy for research support for the coming decade. Its final report of 2003 made “recommendations for a UK wide strategic framework and coordinated delivery mechanisms for research information provision”¹⁵⁷, which led to the creation of the RLN (see below).

The Research Support Libraries Programme was funded by the four higher education funding bodies. It started in the academic year 1999–2000 and finished on 31 July 2002, with funding of almost £30 million awarded during the lifetime of the Programme. The Programme’s overarching vision was to facilitate the best possible arrangements for research support in UK libraries.

¹⁴⁹ AHRB. *Details of the AHRB ICT Strategy Projects scheme*. http://www.ahrb.ac.uk/ahrb/website/images/4_94721.pdf, October 2004, p. 3.

¹⁵⁰ *Ibid.* 6–7.

¹⁵¹ *Ibid.* p. 6.

¹⁵² *Ibid.* p. 6.

¹⁵³ *Ibid.* p. 6.

¹⁵⁴ *Ibid.* p. 6.

¹⁵⁵ *Ibid.* p. 7.

¹⁵⁶ See the full report at: www.publications.parliament.uk/pa/cm200102/cmselect/cmeduski/804/80408.htm#a1.

¹⁵⁷ *Research Support Libraries Group: final report*. <http://www.rslg.ac.uk/final/final.pdf>, 2003, [accessed 02.12.2004], p. 1.



Funded activities include collaborative collection management projects and projects that provided support for humanities and social science research collections.

RSLP projects mainly dealt with traditional library materials “but, in almost every case, have created an electronic resource. These have taken the form of bibliographic and archival records, collection descriptions, digitised images and texts, and web directories and portals”¹⁵⁸ (RSLP 2002). One of the major achievements of the programme is to be seen in the concept of a distributed national collection of library research resources (the Distributed National Collection, or DNC) which was promoted by the RSLP, finding “strong acceptance in the library community” (RSLP 2002). As a result, the importance of collaborative cross-sectoral work has been moved up on the agenda of funding agencies.

The Collection Description Focus is funded by the BL, JISC and MLA to “improve co-ordination of work on collection description methods, schemas and tools, with the goal of ensuring consistency and compatibility of approaches across projects, disciplines, institutions, domains and sectors.”¹⁵⁹ The RSLP Collection Description Schema¹⁶⁰ was designed for physical collections but EnrichUK used it to describe its digitised collections. The CD Working Group will take it as a starting point for developing a DC scheme¹⁶¹, which could be used for resource discovery by metadata harvesting.

10.5 The Research Libraries Network (RLN)

<http://www.rln.ac.uk/>

The Research Libraries Network (RLN) was set up in autumn 2004, with funding of £3 million until the end of July 2007.

RLN has the following objectives¹⁶²:

- provide strategic leadership for collaboration between publicly-funded research information providers and their users
- develop effective, efficient and integrated information resources and services to support UK research
- co-ordinate action to propose and specify solutions to meet researchers’ changing needs, building on the earlier studies into UK researchers’ needs carried out by the RSLG
- act as a high-level advocate for research information, across the UK and internationally.

¹⁵⁸ Davenport, Gill. *About RSLP*. <http://www.rslp.ac.uk/AboutUs/>, 10.10.2002, [accessed 22.12.2004].

¹⁵⁹ Chapman, Ann. *Collection description focus*. <http://www.ukoln.ac.uk/cd-focus/>, 19.11.2004, [accessed 22.12.2004].

¹⁶⁰ Powell, Andy. *Collection Description Schema*. <http://www.ukoln.ac.uk/metadata/rslp/schema/>, May 2000, [19.11.2004].

¹⁶¹ Chapman, Ann. *Collection description focus*. <http://www.ukoln.ac.uk/cd-focus/>, 19.11.2004, [accessed 22.12.2004].

¹⁶² *Research Support Libraries Group and Research Libraries Network*. <http://www.hefce.ac.uk/research/libraries/>, 26.11.2004, [accessed 02.12.2004].



Among its initial actions, the RLN announced that it will carry out feasibility studies and market research to shape the longer-term programme. “Early emphasis is likely to be on improved knowledge of and access to existing resources”. However, work towards “collaborative development of collections to ensure access to the widest possible range of research materials” is only one of RLN’s “future potential work streams”¹⁶³, which also include “collaborative work on developing and preserving digital archives [and] maximising access for professional researchers to key collections”¹⁶⁴.

10.6 The People’s Network

The People’s Network is a project to connect all public libraries to the Internet. “Lottery-funded by NOF and managed by Resource¹⁶⁵, more than 4000 library centres have been set up. People are now able to surf the net, scan documents and images, and use video conferencing facilities for free. In addition, many different community organisations, such as libraries, archives and museums, are collaborating to bring together unique resources in innovative ways on the web”¹⁶⁶.

10.7 Common Information Environment (CIE)

<http://www.common-info.org.uk/>

The Common Information Environment is a project funded mainly by JISC, the British Library and the MLA to “nurture an open environment in which information and information-powered services may be disclosed, discovered, embedded, used and reused in a manner that meets the needs and aspirations of the user”¹⁶⁷. Project funding is £100,000 per annum¹⁶⁸. Members of the project are institutions from the museum, library, archives, educational and health sectors. The rationale for the project is that “significant sums of money are being spent in the UK and around the world on the piecemeal creation of digital content”¹⁶⁹ and that “quality information, funded by public money, is not getting to the right people at the right time”¹⁷⁰. The concept is to set core standards to facilitate interoperability of material, whether digitised or born digital, that is being created through publicly funded initiatives.

¹⁶³ £3 million national framework for UK research information announced. <http://www.bl.uk/cgi-bin/press.cgi?story=1442>, 29.07.2004, [accessed 22.12.2004].

¹⁶⁴ £3 million national framework for UK research information announced. <http://www.bl.uk/cgi-bin/press.cgi?story=1442>, 29.07.2004, [accessed 22.12.2004].

¹⁶⁵ Resource has changed its name to the Museums, Libraries and Archives Council (MLA).

¹⁶⁶ *New Opportunities Fund*. [n.d.]. <http://www.nof.org.uk/>, [accessed 06.09.2004].

¹⁶⁷ Miller, Paul. Towards the digital aquifer: introducing the Common Information Environment. *Ariadne*, 2004, 39. <http://www.ariadne.ac.uk/issue39/miller/>, [accessed 03.09.2004].

¹⁶⁸ Cross, M. The hidden potential of the web. *The Guardian* 21.04.2004 [online]. <http://society.guardian.co.uk/e-public/story/0,13927,1195901,00.html>, [accessed 03.09.2004].

¹⁶⁹ Miller, Paul. Towards the digital aquifer: introducing the Common Information Environment. *Ariadne*, 2004, 39. <http://www.ariadne.ac.uk/issue39/miller/>, [accessed 03.09.2004].

¹⁷⁰ Chillingworth, M. *JISC seeks common ground with information providers*. *Information World Review*. <http://www.iwr.co.uk/iwreview/1154978>, 06.05.2004, [accessed 03.09.2004].



10.8 NOF-digitise

The New Opportunities Fund (NOF) was a lottery distributor created to award grants to education, health, and environmental projects throughout the UK. In June 2004, NOF merged with the Community Fund to form the Big Lottery Fund. The NOF-digitise programme, funded by NOF with £50 million between 2001 and 2004, funded 150 digitisation projects creating innovative on-line learning resources on three broad themes: cultural enrichment, citizenship, and re-skilling. The programme brought together a wide range of partnerships representing the community and voluntary sectors, local authorities, libraries and archives, museums, further and higher education, and the private sector.¹⁷¹ The Programme has put a wide range of material into electronic form, available free of charge, to users of the People's Network and the National Grid for Learning.

10.9 JISC Digitisation Programme

This programme represents a total investment of £10 million. Selection criteria for digitisation were: coherent coverage of a broad range of disciplines; increased accessibility of the material and compatibility with the Common Information Environment. Six large-scale projects were selected after consulting the HE and FE communities:

- British Library Newspapers 1800-1900
- British Library Sound Archive 20th century
- British Official Publications 18th-20th century
- British University Film and Video Council / ITN and Pathé
- History Data Service Census Data 1801-1937
- Wellcome Trust UK/US Medical Journals

10.10 The Scottish National Cultural Strategy

<http://www.scotland.gov.uk/library3/heritage/ncsr-06.asp>

The Scottish Executive has a national strategy for the cultural heritage that includes the creation of digital resources. Other objectives that are relevant here are a review of library legislation to ensure it is still appropriate, support for the National Library of Scotland in developing its ICT facilities and encouraging “new partnerships in both public and private sectors, and further collaboration within the library sector to include the exploitation of ICT and the development of policies for national collections, particularly in relation to Scottish material”.

¹⁷¹ Some of the most prominent projects funded by the nof-digitise Resources are: Enrich UK <http://www.enrichuk.net/>, the National Grid for Learning <http://www.ngfl.gov.uk/>, nof-digitise Technical Advisory Service <http://www.ukoln.ac.uk/nof/support/>, The People's Network <http://www.peoplesnetwork.gov.uk/>.

11 International Initiatives

This report has so far concentrated on UK activities and initiatives. This study also looked at international initiatives in order to assess whether they provided any models for a coordinated approach in the UK. There are many international initiatives underway involving digitisation, preservation of digitised material and access to digitised resources. Each initiative varies in size, approach, access and scope. A few of these initiatives are discussed below.

11.1 Australia

The National Library of Australia has been involved in digitising significant Australian material since 1996 when its “Images1” service was launched. Images1 has now been replaced by the “Library’s Pictures Catalogue” which adopts a ‘hybrid library’ approach by providing access through a single interface to digitised collection items and to material not yet digitised with a fee-based ‘digitisation-on-demand’ option.¹⁷²

The National Library of Australia hosts a wide variety of digitised and digital material, including full-text databases, online Australian government publications, archived websites, and online copies of significant Australian material in traditional formats - photographs, paintings, cartoons, transparencies, negatives, postcards, maps and atlases, printed music, manuscripts, newspapers, books and journals.¹⁷³ Through the Australian Libraries Gateway, the Library also maintains a list of Australian Digitisation Projects.¹⁷⁴ As of December 2004 the list contained 82 projects and their links.

In 2001 the Digital Services Project was initiated as the Library’s:

Key strategy for ensuring effective management of its digital collections and their preservation for future access as technologies change.¹⁷⁵

¹⁷² National Library of Australia: Digitisation. <http://www.nla.gov.au/initiatives/diglibs.html> [accessed 16.11.2004].

¹⁷³ Digital Collections. <http://www.nla.gov.au/digicoll/> accessed 9.11.2004

¹⁷⁴ Australian Libraries Gateway. 2004 <http://www.nla.gov.au/libraries/digitisation/> [accessed 16.11.2004].

¹⁷⁵ Digital Services Project. <http://www.nla.gov.au/dsp/> [accessed 16.11.2004].



The Digital Services Project supports the overall framework and systems architecture of the NLA digital library, including selection, acquisition, storage, resource discovery, delivery, access control and preservation. However, the project covers both digitised and born-digital material. The NLA worked with partners for metadata repository and search systems and digital object storage. In-house, the Library developed a digital collections manager database, a digital archiving system, persistent identifiers and web delivery systems. The Digital Services Project also developed a generic Delivery System to support the products and support web access to the digital collections.

The Library has developed a digitisation policy¹⁷⁶ which includes digitisation goals, material to be digitised, principles, selection criteria, access issues, management of collections, standards, preservation of original materials, provisions for public consultation, marketing and promotion and policy review. The Library has also developed a policy on Preservation Copying of Collection Materials¹⁷⁷ and an Electronic Information Resources Strategies and Action Plan.¹⁷⁸

The initiative has exploited recent standards including the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), which handles persistent identification, and metadata schemas for new types of content. The OAI-PMH opens up new ways of creating and managing the digital libraries while making them more accessible.

*Using handles as the basis for managing the persistence of a large, digitised collection has allowed information to be identified and cited in many different ways. Standards have transformed, and continue to transform, the way in which the National Library conducts its core business of making its digital library collections available for all to use.*¹⁷⁹

11.2 New Zealand

In, New Zealand, the Register of Digitisation Initiatives (RoDI) is hosted by the National Digital Forum¹⁸⁰. RoDI contains basic information about public, private and non-profit organisations digitisation initiatives based in New Zealand or that relate to New Zealand topics.

The directory includes forty-two digitisation projects, online exhibitions and other projects involving digitised content. Material includes property records, photographs, newspapers, music, maps, images, indexes, biographies, exam papers, museum artefacts and letters.

¹⁷⁶ Digitisation Policy 2000-2004. <http://www.nla.gov.au/policy/digitisation.html> [accessed 16.11.2004].

¹⁷⁷ Policy on Preservation of Collection Materials. <http://www.nla.gov.au/policy/micro.html> [accessed 16.11.2004].

¹⁷⁸ Electronic Information Resources Strategies and Action Plan. <http://www.nla.gov.au/policy/electronic/resourcesplanindex.html> [accessed 16.11.2004].

¹⁷⁹ Campbell, D. How the Use of Standards Is Transforming Australian Digital Libraries. *Ariadne*. 41 2004 <http://www.ariadne.ac.uk/issue41/campbell/> [accessed 16.11.2004].

¹⁸⁰ Register of Digital Initiatives. <http://ndf.natlib.govt.nz/register/register.htm> [accessed 9.11.2004].



The National Digital Forum (NDF) is a coalition of organisations including museums, archives, art galleries, libraries and government departments. The NDF identifies opportunities for collaboration, co-operation and information sharing.

The objective of the NDF is to facilitate a national approach to building collections of digital cultural heritage resources. A national cross-sectoral approach will help organisations to avoid duplicating effort share information and develop expertise in the regions and nationally negotiate funding and apply for grants, by providing a strong national platform.¹⁸¹

11.3 USA: Registry of Digital Masters

This Registry is an OCLC/DLF joint project. The OCLC Online Computer Library Center is a non-profit, membership, computer library service and research organisation dedicated to the public purposes of furthering access to the world's information and reducing information costs.¹⁸² The Digital Library Federation (DLF) is a consortium of libraries and related agencies that are pioneering in the use of information technologies to extend their collections and services.

The Registry provides a place for institutions that have created (or are otherwise responsible for) digitised versions of traditional printed monographs and serials to record:

- what specific items have been (or are about to be) digitised;
- where they can be accessed;
- the specifications followed in digitisation.

The Registry supports two specific types of use:

- Staff engaged in digitisation efforts should be able to discover whether a specific item has already been digitised, and if so whether the digitisation has been done at an adequate level such that another digital copy is not required.
- The data contributed to the Registry should be available for large-scale extraction and reuse. One obvious type of reuse that can be envisioned is the ability of a library to extract catalogue records for materials digitised elsewhere for inclusion in its own local catalogue. Another would be the gathering of metadata about digital materials in a specific topical area for inclusion in a portal or subject catalogue.¹⁸³

OCLC has also been involved in adding records for digital material to its WorldCat catalogue for some time.

¹⁸¹ National Digital Forum. <http://ndf.natlib.govt.nz/index.htm> [accessed 16.11.2004].

¹⁸² About OCLC. <http://www.oclc.org/about/default.htm> [accessed 9.11.2004].

¹⁸³ DLF Registry of Digital Masters., <http://www.diglib.org/collections/reg/reg.htm> [accessed 9.11.2004].



11.4 USA: Association of Research Libraries

The ARL Digital Initiatives Database, a collaboration between the University of Illinois at Chicago and the Association of Research Libraries, is a Web-based registry for descriptions of digital initiatives in or involving libraries. Established in response to the need for greater information sharing of lessons learned from digitisation projects, the aim of the database is to capture basic information for a wide range of digital initiatives and provide a venue for those in the library community to share project specifics as well as lessons learned.

The database provides access to initiatives underway highlighting technical features, policy choices, and subject matter of the content. Libraries are encouraged to register information about all projects both large and small in scope. ¹⁸⁴

The database lists 549 projects, both by project name and by host institution. It includes some international projects though the majority are U.S. based.

11.5 USA: Berkeley Digital Library SunSITE (U.S.)

The Berkeley Digital Library SunSITE¹⁸⁵ is sponsored by the University of California at Berkeley and Sun Microsystems Inc. SunSITE builds digital collections and services while providing information and support to digital library developers worldwide. The SunSITE consists of 24 digitised collections, mainly consisting of university projects, and covers mainly the Humanities subject areas but also includes a few science related topics. However, there are no outside links.

Overall the USA has a number of digitisation projects underway. It is not clear, however, if these projects or resources overlap or are coordinated in any way.

11.6 Canada

The Canadian Inventory of Digital Initiatives, hosted at the Library and Archives Canada provides links to, and provides descriptions of, digitised Canadian resources. These initiatives include digital collections centred around themes and collections, reference sources, and databases. The Inventory provides an overview of each submission that includes its name, participating organisations, content description, subject categories (broad Dewey decimal classes), and contact information.¹⁸⁶

The inventory encourages all organisations or individuals who create digital content relevant to Canadians to submit details of their initiative(s) either in the planning stages, or when completed.

¹⁸⁴ ARL Digital Initiatives Database. <http://www.arl.org/did/> [accessed 17.11.2004].

¹⁸⁵ SunSITE Digital Collections. <http://sunsite.berkeley.edu/Collections/> [accessed 17.11.2004].

¹⁸⁶ Inventory of Canadian Digital Initiatives. <http://www.collectionscanada.ca/initiatives/index-e.html> [accessed 9.11.2004].



*“The Inventory provides links to, and brief information about Digital Initiatives that create Web-accessible Canadian resources. Submissions from public, private, and non-profit organizations as well as from individuals are welcome. Submissions for Web-accessible resources created outside Canada that deal with Canadian topics are encouraged”.*¹⁸⁷

The inventory covers born digital material as well as digitisation projects. The inventory includes a total of 280 records of all subjects, including 196 full text records, 229 images, 107 bibliographic records, 44 audio, 30 video, 4 3D objects, 16 numerical/statistical records, from libraries (134), archives, publishers, museums, galleries, associations, international organisations, public records, higher education institutes, schools, and government organisations.

11.7 United Nations: UNESCO

UNESCO (United Nations Educational, Scientific and Cultural Organisation) an agency of the United Nations, encourages international collaboration. UNESCO provides funding in many educational areas and lists 16 digitisation projects that have been funded to date.¹⁸⁸ UNESCO also initiated the Memory of the World Project, as well as a number of regional and inter-regional projects including collections of digitised material from the national libraries of twelve countries including Brazil, Chile, Colombia, Costa Rica, Cuba, El Salvador, Mexico, Nicaragua, Puerto Rico, Peru, Portugal and Venezuela.

The Memory of the World Programme, which is co-ordinated by the UNESCO Information and Informatics Division in Paris, aims to alert decision makers and the public to the risks facing the world’s documentary heritage and the need to preserve it, while also ensuring the widest possible access to this heritage. Part of the Programme is the Memory of the World Register of collections of world significance. The register contains digitised collections from around the World and is listed by institution, country, digitisation project and material type. An international advisory committee guides the construction of the Register.¹⁸⁹

11.8 European Union

11.8.1 MINERVA

*MINERVA is a network of Member States’ Ministries to discuss, correlate and harmonise activities carried out in digitisation of cultural and scientific content for creating an agreed European common platform, recommendations and guidelines about digitisation, metadata, long-term accessibility and preservation.*¹⁹⁰

¹⁸⁷ Scope of database. <http://www.collectionscanada.ca/initiatives/s46-200-e.html> [accessed 9.11.2004].

¹⁸⁸ UNESCO/IFLA Directory of Digitised Collections. <http://www.unesco.org/webworld/digico/> [accessed 17.11.2004].

¹⁸⁹ UNESCO. Memory of the World Programme: preserving documentary heritage. 2001. (http://www.unesco.org/webworld/mdm/index_2.html), [29.8.01].

¹⁹⁰ About MINERVA. <http://www.minervaeurope.org/whatis.htm> [accessed 9.11.2004].



The main goal of the European initiative is to set up a cluster of projects working on the digitisation of culture in order to avoid duplication of effort, encourage exchange and promotion of good practice and results in a sort of cross-fertilisation within the group. MINERVA aims to co-ordinate national programmes and is strongly based on the principle of creating one system or register of national digitisation activities. The MINERVA website also lists digitisation guidelines from various countries including the UK¹⁹¹. Initiatives include technical guidelines for digitisation, preservation, and collection of resources.

During 2004 the MINERVA network was extended to the new European accession states, Russia and Israel through the MINERVA Plus project. The MINERVA and MINERVA Plus networks organise conferences, workshops and events relating to digitisation of cultural content. Publications include:

- Technical guidelines for digital cultural content programmes online at: <http://www.minervaeurope.org/publications/technicalguidelines.htm>
- Good practice handbook online at: <http://www.minervaeurope.org/publications/goodhand.htm>

For more information about MINERVA see: <http://www.minervaeurope.org>

The National Representatives Group for the Co-ordination of Digitisation Policies (NRG) is a group of experts appointed by the national authorities for culture in Europe. David Dawson of MLA has been nominated to represent the United Kingdom on the NRG. The group was established by the European Commission with the aim of improving the digitisation of cultural and scientific content in Europe and achieving the objectives set out in the 2001 'Lund Action Plan.' The NRG meets twice a year and is active in the following areas:

- Improving policies and programmes through cooperation and benchmarking
- Discovery of digitised resources
- Promoting good practice
- Access to quality digital content

The Forum for Network Co-ordination represents the UK node of the Digitising Content Together Initiative. This joint initiative of Member States and the European Commission aims to co-ordinate digitisation activities, and to build a platform for enhanced collaboration between the countries in terms of sharing skills, best practices and standards. It forms part of the action plan for eEurope, agreed by the Council of Ministers at the Feira summit in June 2000. Each member state has nominated an expert to a National Representatives Group. In the UK the Department for Culture, Media and Sport (DCMS) has nominated the Museum Library and Archive Council (MLA).

¹⁹¹ *Digitisation Guidelines: a selected list.* <http://www.minervaeurope.org/guidelines.htm> [accessed 9.11.2004].



11.8.2 GÉANT

GÉANT is a collaborative project involving the European Commission, DANTE (Delivery of Advanced Network Technology to Europe)¹⁹², and twenty six National Research and Education Networks (NRENs) representing thirty countries across Europe. Established in November 2000, the main aim of GÉANT is to develop the GÉANT network (a multi-gigabit pan-European data communications network for research and education use). Other activities aim to support research networking and include network testing, the development of new technologies and support for research projects¹⁹³. Funding for the project is divided between the participating NRENs and the European Commission.

11.9 Denmark

Denmark's Electronic Research Library (DEF)¹⁹⁴ is a portal providing information and access to all projects and resources, including digitisation, managed by individual libraries with a common user interface and access system, enabling cross-searching of all collections. The DEF involves co-operation between the Danish Ministry of Culture, the Ministry of Education and the Ministry of Science, Technology and Innovation, which allocated a total of 200 million Danish Kroner for the period 1998–2002. The DEF recently obtained permanent status¹⁹⁵. The site contains information about many projects as well as useful information for researchers.

*Added benefits will include the negotiation and acquisition of 'national licences' for electronic journals and information databases; the provision of funding for the digitisation of selected collections, a retro-conversion of paper-based catalogues; and the development of the Danish Research Database and initiatives for electronic publishing.*¹⁹⁶

11.10 Germany

In 1997, the German Research Foundation (DFG, the central, self-governing research organisation promoting research in Germany's higher education and research institutions) launched a funding programme for the digitisation of library materials as part of a wider initiative to create a German digital research library. In support of this programme, the Centre for Retrospective Digitisation (GDZ) was established to coordinate national efforts towards standardisation in areas such as digital conversion, online access and bibliographic description.

¹⁹² DANTE. <http://www.dante.net/> [accessed 15.12.2004].

¹⁹³ Welcome to the GÉANT home. <http://www.dante.net/server/show/nav.007&>, [n.d.], [accessed 06.12.2004].

¹⁹⁴ Denmark's Electronic Research Library 2002, www.def.dk [accessed 1.12.2004].

¹⁹⁵ Skov and Skårbak 2003, p. 326.

¹⁹⁶ Hughes 2004 p. 14.



The Center in Göttingen is engaged in evaluation of tools and techniques for image capture and text conversion, bibliographic description, document management and the provision of remote access.¹⁹⁷

There are seventy-eight listed projects involved in the retro-digitisation of library holdings. While each project is accessible from the site, each has its own access restrictions and policies.

11.11 Switzerland

Memoriav, the Association for the preservation of the audiovisual heritage of Switzerland is a database of all audiovisual digitised material in Switzerland. The database lists 182 records searchable under organisation, place, and material type.¹⁹⁸ Some collections are available to access free of charge, others listed provide only project information and do not have links to project sites.

11.12 Netherlands

The Memory of the Netherlands project is based at the National Library of the Netherlands and incorporates a registry that includes projects of images and texts from collections of Dutch cultural institutions. The database lists 37 digital collections including music manuscripts, photographs, maritime history, poetry, cultural heritage, fashion magazines, and material from the National Museum etc.¹⁹⁹ Most collections contain just some images from the whole print/physical collection but all are accessed free of charge and can be saved in personal folders for use. If such folders are not used, they are removed after one month, following email notification.

11.13 Involvement of Study Participants in International Activities

While the interviews did not focus on international activities, interviewees were able to provide a perspective on international activities and some information of their involvement in such activities. This section summarises these findings. Responses referring to international involvement mainly fell into one of the four following categories:

■ Funding

A considerable amount of funding for digitisation projects is received from non-UK sources, mainly from US institutions. Hardly any funding is drawn from European Commission funds. These are regarded as “hard to get hold of” and “complex” and therefore not worth applying for.

¹⁹⁷ GDZ Digital Collections. <http://gdz.sub.uni-goettingen.de/en/index.html> [accessed 17.11.2004].

¹⁹⁸ Memoriav. <http://www.memoriav.ch/> [accessed 17.11.2004].

¹⁹⁹ The Memory of the Netherlands. <http://www.geheugenvannederland.nl/gvnnl/all/index.cfm/language/en> [accessed 17.11.2004].



■ Involvement in projects of international scope

A number of digitisation projects have an international dimension. Examples are projects that involve international partners like the International Dunhuang Project or the *Medical Journals Backfiles*, and projects that reach an international audience like the National Archives' *Moving Here* project or the National Archives of Scotland's *Scottish Documents* project.

■ Standards

Some of the interviewees are actively involved in setting standards that are used internationally (e.g. AHDS and UKOLN).

■ Using or offering services of international scope

Some of the service providers that were interviewed work with and for international groups. This can be seen particularly in cases where the service needs to be self-sufficient. In these cases international "business" contributes considerably to their profitability. Examples are seen in the KDCS and in the Imaging Services of Cambridge University Library.

There was very little evidence of interviewees' involvement on international strategy issues. In general, larger institutions are aware of international strategic activities (for example, the establishment of the Lund principles) but there is little activity in this area.²⁰⁰ As regards European involvement, it appears that the MLA is the only institution to actively pursue involvement in representative groups, coordinating activities and strategic initiatives. It is a member of, for example, the Minerva Project, The National Representatives Group for the Co-ordination of Digitisation Policies (NRG) and the Forum for Network Co-ordination. The MLA therefore acts as the UK interface to the European Union.

²⁰⁰ This is not true for activities related to digitisation, for example preservation or standards. There is much international activity with very strong, if not leading activity from the UK. The statement here relates to activity on strategy issues only.

12 General Views on the Future of Digitisation Activities

There was a consensus among interviewees that there will be more digitisation in the future.

Certainly from our perspective, what we're seeing is that online is the way to go.
(Archive)

I think we do have a professional obligation to provide it in the best format and currently the best format seems to be online.
(Publisher)

However, there was no clear sense of how this will impact on the sector.

Some libraries and archives have started to make provisions for on-going digitisation activities. For example, they have established appropriate posts, have ring-fenced funding and have laid out policies and strategies to deal with future digitisation. There is also a noticeable tendency towards increased networking activities in order to manage the transition.

We're trying to increase our knowledge [...] so we've been turning up to lots of digital type conferences.
(Library)

And this idea of knowing what other people are doing as well is a big issue for us, because we'd like to work with other people; I mean it takes more effort; it's more complicated, but we would definitely like to.
(Library)

Publicly funded service providers are aware of their temporary status and are to some extent unsure about their future.

Really we have survived because we are filling the gaps in service provision, we will adapt according to community needs. In 2006 we are up for funding renewal, so the future depends on the evaluation, we have to look at an exit strategy too.
(Service Provider)



Whereas self sufficient service providers are more confident:

Future plans? More of the same, bigger, better, bolder, all that sort of stuff. What, where I really want us to be is as a, what I would call, a hub of excellence within Europe. I want us, not necessarily to be the place that has all of the answers, but that is the gateway to all of the answers.

(Service Provider)

Publishers are cautious on future involvement in digitisation activities. Clearly they see the digital realm as the future but recent developments in the sector, for example, the Open Archives Initiative and Google initiatives, infringe on the roles that publishers would have traditionally assumed they would take on. Also a number of libraries have successfully run digitisation programmes which to some extent supersede publisher's digitisation activities. Publishers are aware that this might have repercussions for some of their business and think tentatively ahead:

The world changes so quickly in such a short space of time, I think if you were to see five commercial providers today that are similar to us, all of them would have gone through a great deal of rethinking of their role in the last week, given what Google have announced, and so these things come along and they do... mean that that changes pretty rapidly.

(Publisher)

And:

I do think that... as more and more content becomes available, freely available, through publicly funded projects and through initiatives like Google, the importance of organising information, giving access to information, having good metadata, having good indexing tools, having good finding tools is increased and that's something that we can contribute.

(Publisher)

This could mean that the basic content is freely available and the role of the publishers then focuses on adding value to that content. So if users want more than they basic content they could pay for such tools to interpret or manipulate it.

One publisher is confident in future solutions to IPR issues:

Digital content (as we have seen with music) could be shared illegally between users, thus potentially destroying the industry – but music has found a solution (e.g. iPod) and there is no reason why publishers should not.

(Publisher)

It is clear that there is increasing scope of public-private partnerships from the examples of EBBO-TCP, Google and other developments.



Funding bodies recognise the increasing importance of digital resource provision and are responding to it. Some are doing so in a proactive mode and others are acting more reactively:

However, we do fund a bit of digitisation [...]. We're putting more and more emphasis on sustainability of the resource, which technically used to be a bit of a problem, but we also mean keeping up the intellectual sustainability of the resource which is new territory for us.

(Funding body)

Future roles...will be to continue to operate largely in responsive mode to develop some strategic initiatives and priorities and to develop a strategy specifically relating to our work in digitisation, digital initiatives generally which explicitly recognises the roles of other organisations, so we are part of a wider landscape area. (Funding body)

So we're trying to encourage open access and we're tackling it from both ends, we want the current stuff which we're funding particularly, to be available, but we also recognise we want the archive to be available, and I think it is only a token gesture but we believe that this should be available and I suppose it's our attempt to say well let's not leave it entirely to the private sector to digitise and charge us back for it....

(Funding body)

12.1 Issues of Concern

Interviewees were asked what the issues were they were concerned about in the future. Responses can be summarised:

- The long term maintenance and preservation of digital resources is receiving increasing attention. This results in the establishment of Digital Object Management systems (DOM) where possible and in increasing interest in participating in collaborations and networks like, for example, the Google initiative or the Digital Preservation Coalition (DPC).
- In relation to that the funding structure was mentioned as unsatisfactory. It seems that most library digitisation activities are funded on a project basis. This funding may not include a maintenance budget.
- The intellectual property rights issue (IPR) was mentioned as an area of concern, particularly for audio and media content.

Finally, interviewees thought that the lack of an overall strategy for digitisation in the UK was a cause for concern. One interviewee summed up the present approach to digitisation:



It's haphazard, it's ill-focused, it's cherry picking special, it's cherry picking collections as opposed to strategic, well-planned, it's not based on analysis, institutions don't do an analysis of their holdings which I think they really ought to do a collections survey and then think about what it is that from that to, to digitise based upon an analysis of their user needs. Who are their user communities?
(Digitisation service)

Some digitisers may see this as contentious and some of our respondents did say they looked into user needs.

The majority of interviewees agreed that having a national strategy on digitisation would be desirable. Representatives from libraries, archives and subject representatives were particularly supportive, whereas there was hesitation among some of the funding bodies. The view among service providers was divided into those who see the need for strategic co-ordination and those who argue against a national strategy.

12.2 Views on a National Digitisation Strategy

Positive reasons given for the creation of a national strategy involved co-ordination, including standards, selection criteria, funding allocation, and co-operation.

I think a national strategy is necessary in order to provide recommendations on which areas to digitise to avoid duplication. Eventually such a strategy would need to be international.
(Subject representative)

Maybe we should look at the different funding bodies out there and there is a role to play to try to take a more centralised view on what is needed.
(Library)

It's also good to remember that it's not possible to digitise everything, there need to be strategic decisions about what will be digitised.
(Service provider/Expert)

If we were working towards national priorities, for example, it was set what they wanted to make available in different sectors, the HE/FE, schools space, public domain the whole thing becomes easier for us to make proposals saying this is content we have available.
(Library)

There was no clear idea among interviewees of the content of a national strategy or who should develop it.

One interviewee spoke vehemently against a national digitisation strategy, saying that it would stifle innovation and would be nearly impossible to achieve.



First of all the frameworks can stifle innovation and that's a very, I, but it is a very, very, for a lot of people it is a very compelling reason not to force people into frameworks. Second of all, in order to achieve a framework you're going to have to get buy in from every single funding agency. Thirdly, people who write and produce the framework for you are going to have to be a lot smarter than people who produced the, who produced the frameworks in the past. The NOF digitise framework was rushed.

(Service provider/Expert)

While this interviewee agreed with the objectives that a national strategy would aim to achieve, they argued that they would be achieved better in a non-regimented environment. They would be achieved by having clear guidelines.

What we need is a set of really really clear gold mark standards. Gold mark policies, gold mark guidelines that people can choose that are kept under regular review and instead of telling everyone to use those he pulled us towards them.

(Service provider/Expert)

Another interviewee said:

I think you've gone a step on whereas you're actually saying that we want to shape what people are doing whereas I'm saying that at the moment we don't even know what they're doing, so how on earth you think you can shape what people are going to be doing and you don't know what they're doing.

(Library)

While this study is limited by time and resources, it does go some way to giving an idea of what people are doing (See Chapter 2).

While interviewees were mostly unclear about who should develop a national strategy, there were some suggestions.

I think we have to start by finding out what we've got And it might be that a smaller organisation could be funded in some way to do that first very practical steps before we move onto the bigger policy. I think certainly that RLN could have role in shaping the strategy , in saying what we have to do is have a strategy first, you know, how to print this or serials or whatever you know. I mean my concern is....RLN seems to have very little interest in archives.

(Library)

JISC already does organise collection development though its collection committee. And it is aware of developments though initiatives like the information environment the image collection and other of their own initiatives. It does have some idea. And it has already started to make collections widely available across country like the Biomedical I cannot think of anyone else who could do it. There seems to be two parties: the one that thinks JISC is terrible and the one that thinks JISC is the answer to everything.

(Library)



Interviewees also commented on a possible national infrastructure for digitisation. One digital library expert thought that while it should be coordinated, it should be distributed.

There has to be someone who sits there and say what does a national infrastructure look like, let's try and put it in place and let's try and cover all of the players, not just the big ones but the little ones too.

(Digitisation service)

There are various things here, we don't think...even if you have big central systems, the overall model has to be distributed. There is no way there is going to be one central system ... But I think the other thing is to do with something we have an interest in and that is making sure digitisation, smaller digitisations' are funded and local digitisations' are funded.

(Digitisation service)

It is clear from discussion with various players that there is a need for coordination in digitisation activities, even though they do not all agree on how this should be done.

13 Conclusions and Recommendations

The overall aims of this study were to:

- Produce a high level survey of digitised material, both already available and in the process of being created, held in UK research collections across all disciplines
- Survey demand for digitised material and identify gaps in existing provision
- Develop a mechanism for identifying future digitisation priorities
- Review funding structures and opportunities and assess possible ways of funding priority areas
- Recommend standards and formats for future digitisation projects
- Provide an outline action plan for a national digitisation strategy for the UK research community

These were ambitious aims for a four month project. This report brings together and adds to what is already known about digitised resources available to the UK research community (Appendix F). The study has also provided information on UK research librarians' views on what rare, vulnerable and valuable material in their collections remains to be digitised. The findings here are limited by cooperation with the project, but the major research libraries did participate. They are also limited by the amount of detail respondents were able to provide.

The study team were asked to consider research needs and demands with references to the literature. There is little existing literature on this. It was not feasible to carry out a comprehensive user needs assessment as part of this study, given the time and resource constraints. The study team sought to improve on this lack of existing information through interviews with organisations such as research councils and scholarly societies. This final chapter makes some recommendations on a mechanism for improving intelligence on needs and demands that would inform the identification of future digitisation priorities.



This report provides an overview of standards and formats, identifies those which are widely used and includes comments on standardisation in digitisation from digitisers and experts in the area (Chapter 6). Funding structures and sources of funding have been reviewed and a range of funders of UK digitisation projects is identified (Chapter 8). Possible funding models are discussed, as are examples of cooperative digitisation models (Chapters 8 and 9).

This chapter contains a set of conclusions based on the data gathered during the study. It also contains a list of recommendations, which amount to an outline action plan for improving the co-ordination of digitisation activity in the UK for the benefit of the UK research community. A major theme running through this report is a lack of co-ordination – between funding bodies, support services and digitising organisations in particular. This chapter makes recommendations based on the data gathered. For areas where there was not enough data to draw even tentative conclusions, there are recommendations for issues that require further investigation. It also considers the roles of the various bodies involved in digitisation in taking the suggested actions forward.

13.1 Existing Digitised Resources

The existing literature and the data gathered during this study suggests that an impressive amount of digitised material already exists and that there has been considerable expenditure of public funds – around £130 million in the last ten years - in the creation of digital content. The bulk of digitisation activity carried out in the UK is mainly in the arts, humanities and social science fields. However, this does not necessarily mean that these areas are now well served by digitised resources, or that researchers are aware of the resources available to them. While a lot of formally published and manuscript material seems to have been, or is in the process of being, digitised, there was a comment that digitisation of non-textual material in the humanities seems to be less successful in terms of use. It is not clear whether it is actually helpful to digitise artefacts for arts and humanities researchers. While it may improve access - in that this material can be looked at remotely - this may not be how researchers want to use this material. Without an improvement in digital technologies so that more properties of three-dimensional objects can be captured, digitisation of this material may not be a high priority in the short-term. This study has identified suggestions for arts and humanities reference works and other resources that could be digitised. The results of the British Academy study on the needs of the arts and humanities community should provide a fuller picture of what is needed and a more accurate gap analysis can be carried out. This study has also identified a need for the development of tools to help researchers study, manipulate and analyse material. The Arts and Humanities Research Board has shown an interest in not only the creation of digitised resources for research, but also the use of ICT in the arts and humanities in general through its strategic ICT in Arts and Humanities Research programme. The AHRB ICT Strategy Projects Scheme apparently considers the need for and development of appropriate tools for researchers.



There was a suggestion in this study that the most important resources for scientists are journals and datasets, while other sorts of material are little used. While much current material of interest is already available in digital form, there is much activity in the digitisation of journal back runs. Publishers, or bodies such as JSTOR, carry out this activity. Some of this activity is subsidised by funding bodies: funding bodies either pay for the cost of digitisation or for publishers to make material they have digitised available for free or at a reduced cost. The digitisation of image material was identified as an area that had been neglected in general, although apparently the biomedical field is well served in this area. Chemistry was identified as a field with major gaps, but only by one interviewee, so it would be better to conduct a more comprehensive study to get a more representative view.

The research identified a number of large-scale projects of interest to social science researchers and the social sciences are well served by data archives. However, it is not clear from the literature or from this study how well the needs of social scientists are being met. Again, a more systematic study of researchers in this field would be helpful.

13.2 Researcher Needs

One of the questions considered in this study was subject areas where there is significant demand from researchers. The study identified completed and ongoing studies of user needs and the findings are summarised in Chapter 4. Given the time constraints it was not possible to carry out a systematic survey, the study team approached a small selection of research bodies and societies. While interviewees provided some suggestions of gaps, the study team were not able to get a strong feel for the nature and levels of demand. One point that was raised was the *lack* of demand for digitised material, particularly in arts and humanities. These results highlight the need for a co-ordinated and systematic survey of user needs, particularly in the sciences and social sciences.

A possible way forward could be through Research Councils UK, since this is an umbrella body for the UK research councils. Such a survey could be planned and designed through Research Councils UK, but executed through individual research councils. The methodology may have to be customised to the different fields, but should be informed by existing data on searching behaviour so that appropriate retrieval methods and tools are identified as well as the primary content that would be useful. The research councils have various structures in place, such as research programme managers and panels that could be consulted or which could conduct consultations with the research community in different fields. The councils with ICT programmes could perhaps use this vehicle. The data gathered could be analysed at the level of individual research councils and possibly aggregated at national level. A more comprehensive survey of the views of subject associations, academies and royal societies could also provide more detailed feedback on researcher needs.



An alternative to this approach would be user needs surveys carried out by research libraries, perhaps through the Research Libraries Network. This should be a more focused study than the exercise carried out for the Research Support Libraries Group. However, researchers may well be more motivated to respond to research bodies than the RLN, the library community to help to encourage RLN awareness and thus enhance its impact.

The findings of these studies could inform policies and strategies of the research councils and be shared with JISC and CURL and/or the Research Libraries Network so that the response to the findings can be co-ordinated. The initial exercise will necessarily be large-scale, but knowledge on needs and demand could be updated periodically. This could be linked to trigger events, for example periodic strategic reviews of research and/or content creation programmes.

13.3 Future Digitisation Activities

The research libraries surveyed for this study provided information on collections that remain to be digitised. While this list includes material from major higher education and research libraries, it misses material held in the further education sector because of a lack of participation from this sector. The collections listed are considered by their owners to be rare, vulnerable or valuable in some way. The nature of these collections needs to be investigated further by bodies such as CURL, JISC and the Research Library Network. It may be worth carrying out a separate survey of the further education sector. However, there is a question of whether material should be digitised just because it is rare or vulnerable, or whether there should be a demonstrable need. While it would make sense for these bodies to take forward digitisation of material held in libraries, this activity could perhaps wait until a clear overview of research needs is available. At this point a more comprehensive gap analysis could be conducted.

13.4 Identification of Existing Digital Collections

The survey indicated some issues in the creation of metadata records for digitised material. While two thirds of survey respondents said there were records for all material digitised, study respondents mentioned that a lack of bibliographic records was an issue. It seems that in some cases, records do not exist for the originals and metadata creation is a higher priority than digitisation. Metadata creation is an expensive part of the digitisation process and this activity is one that could have a negative effect on existing library operation. It therefore seems sensible that metadata creation is costed into funding bids and that funding bodies be prepared to fund metadata creation. It seems pointless to digitise without providing the means to retrieve digitised resources. It would also be unfortunate if digitisation of useful resources is delayed or does not take place because of a lack of metadata. Automation of



metadata creation and re-use of existing metadata records would also ease this situation. However, the latter approach is likely only to be appropriate for items that are not unique.

The issue of lack of awareness and resistance to use of resources available on the part of researchers needs to be addressed, otherwise large investments in digitising material will be wasted. JISC is already working on this with research councils through its ICT awareness programmes. While digitised collections are likely to be included in institutional catalogues and Web sites, information on digitised resources should also be covered in the search tools used by researchers, including the Research Discovery Network. Some resources already are, but coverage needs to become more comprehensive. Our survey found little evidence of OAI-PMH compliance. Harvesting of metadata records and the provision of search services based on harvested metadata might be worth exploring. Without more detailed knowledge of how researchers search for information, it is difficult to say which is the best approach here. From what evidence we found, search services might be more appropriate for scientists and browsing through, for example, the RDN might be better for arts and humanities researchers.

A comprehensive listing of existing digitised resources could facilitate the analysis of gaps in provision. The creation of new digitised resources to meet identified needs could also be facilitated by a list, not only of what has already been digitised, but also of what is in the process of being digitised. One of the deliverables of this study is a list of digitised resources available to the UK research community. While this study included a comprehensive search for digitised resources, this search was complicated and may well have missed important resources. As described in section 2.1, several sources had to be searched. There is a need for a better mechanism for identifying relevant projects and collections. There is a precedent here in preservation microfilming. In the late 1980s and early 1990s, the Andrew W. Mellon Foundation funded the Mellon Microfilming Programme in the UK. This programme involved filming material to preservation standards; it also involved cataloguing material digitised and submitting records to various registers, both in the UK and overseas. This register was useful in that collection managers could avoid duplication by identifying material that had already been microfilmed.

Registers and catalogues for digitised material already exist. The systematic submission of information on digitisation projects and material digitised to a national and perhaps international register should be investigated. A UK Register of Digital Surrogates, similar to the National Register of Archives, could facilitate greater collaboration and cooperation. As the register develops, gaps in provision will become increasingly clear. The register could also help in the identification of relevant projects and collection. The appropriateness of existing registers, for example the UK register of preservation surrogates and the OCLC/DLF registers (see 11.3) should be investigated, as should the nature of the information to be submitted and the best methods for submission. It may



be necessary to modify existing registers to allow for information on projects and digitised resources, so the registers in other countries mentioned in this report should be examined as models. Any system would need to be simple and inexpensive to contribute to, in order to maximise participation.

Digitising organisations may well need to be motivated to submit information on projects and digitised material. This may be difficult in the private sector, although publishers may find benefits in a wider awareness of their digitised products and services. There are precedents for the submission of records to registers by commercial publishers (ProQuest). Funding bodies could stipulate that recipients of grants should submit records as a condition of funding. How information could be submitted retrospectively is an issue that needs to be explored. CURL and/or the Research Libraries Network could take the lead on this work. However, there needs to be a coordinated approach, so JISC may be the most appropriate body to work with the research and funding councils on this. JISC could also work with other major funding bodies to ensure a coordinated approach.

13.5 Standards and Formats and Collection Management Issues

There are several sources of guidance on standards and formats relevant to digitisation. This study has shown that whilst individual projects do things a little differently and that standards and formats depend on materials digitised and purposes, there is a core set of standards and formats used by many projects. Library-based projects are mostly using some form of Dublin Core or MARC and using XML and METS encoding for metadata. Archives use the EAD and ISAD(G) schemas for records and finding tools to meet their own needs. Library of Congress Subject Headings are used for subject access in the library sector. There seems to be less standardisation amongst publishers and digitisation services. It does seem clear that the choice of metadata format depends on what is being digitised and for what purpose.

There are many different support services available in the UK for digitising organisations. At their own admission, there is a degree of overlap between these services. Now that digitisation is becoming more established, the time may be ripe to review the services available in order to identify any areas of overlap and explore possibilities for consolidation. This recommendation really applies to the JISC-funded services. It seems that there is a plethora of guidance available for several sources. The survey carried out for this study showed that digitisers were using a number of different services and sources of advice. As for funding sources, it may be useful to have a single point of access to guidance and advice on different aspects of digitisation, including technical, legal and management guidelines and case studies. The advice may be provided by different services, but the users would have one access route.

The Common Information Environment seems to be the vehicle for coordinating use of standards and formats across the library sectors, so it looks like this issue is in hand.



Although not the most frequent response, some survey respondents did identify copyright as a factor in selection of material to digitisation. Use of legal experts was also mentioned as a source of expertise consulted by would-be digitisers. A specialised copyright clearance (and digitisation) service for the sector already exists, but our findings suggests it is not well used. It is not clear why this is the case, unless digitisers are not aware of its existence. There are now also digitisation services available that could be used by digitisers. So digitisation activities do not necessarily need to disrupt collection management processes, nor does digitisation need to be integrated into the collection management function. It can be outsourced, indeed digitisation was outsourced by some of our survey respondents, although selection and quality control may have to remain internal activities. Respondents did not comment on how resource intensive these activities are. Given that much digitisation seems to involve at least some external funding and obtaining this funding requires the preparation of funding bids, this process may also be disruptive of library operations.

Respondents to the questionnaire survey also seemed concerned about the long-term management of digitised resources, both in terms of funding and expertise. Research libraries planning digitisation projects need to take this into account and plan for it. Funding bodies are already beginning to expect this from proposals. The big question is how it will be funded and whether it is appropriate for funding bodies to provide for on-going maintenance or whether it is the responsibility of digitisers. There are several recommendations here. Digitisers need guidance on long-term management and preservation. They need to be aware of what sources of guidance exist and which support services can assist them. The Digital Preservation Coalition should continue its work on raising awareness and could consider the provision of more case studies from its members and international contacts. The newly established Digital Curation Centre should also be able to help here. Funding bodies (if they do not do so already) and recipients of funding should consider the use of existing data archives to facilitate safe storage and preservation of digitised resources when planning and funding digitisation projects. Several digital archives already exist in the sector, so libraries do not necessarily have to develop all the systems and infrastructure to store and manage material in the long-term or have to find on-going resources to support these activities.

13.6 Funding Opportunities

The study found that lack of funding was a major deterrent to digitisation. At the moment there are a plethora of funding bodies and opportunities and there is a hint from the study that organisations planning to digitise have to spend time identifying and exploring funding opportunities. It would seem sensible to have a more co-ordinated approach to the identification of funding opportunities. Support bodies already identify potential funding bodies, but the possibility of some sort of portal that provides a “one-stop shop” for funding information could be developed and maintained. This could provide up-to-date information on funding bodies with links to their Web sites and documentation. It could also provide information on new programmes and calls for proposals. This portal



could be useful to libraries and archives (in all sectors) and also researchers who wish to start digitisation projects. There are various possible candidates for this, including CURL, JISC, the Research Libraries Network or one of the digitisation support services. The Museums Libraries and Archives council would be another candidate given its remit (emanating from the European Commission) in UK digitisation activities.

It has become clear during the course of the study that co-ordination is needed. We tentatively suggest that any “national strategy” has to be formulated at a very high level and centralised implementation may not be feasible. It is probably not realistic to expect the various UK public sector funding bodies, never mind other independent and international funders, to develop a unified strategy for funding digitisation in the UK, but it should be possible to improve co-ordination. The project team are loathe to recommend setting up a new body to organise and oversee the implementation of digitisation in the UK; this would take time to set up and cost money that might be better used elsewhere. Funders could work co-operatively, through existing fora, such as Research Councils UK, or through a new forum including the main funding bodies, to co-ordinate activities. It should certainly be possible for the UK public sector funding bodies to do this. The JISC and the research and funding councils should be able to work together. The JISC could act as the link to the research libraries, through CURL and/or the Research Libraries Network, and the MLA could be the link to the lottery funding bodies.

13.7 Funding and Business Models

This study uncovered a variety of funding models for digitisation. There are always costs involved in digitisation and someone has to pay. The thing to avoid is the need for the research community to pay very large sums of money to access digitised research material, particularly if that material has come from research library and archive collections. Commercial publishers, understandably, need to make an acceptable return on any investment they make. While EEBO was seen as a successful cooperative venture, there was also a view that the cost of the resulting product is not welcomed by the research library sector.

The Google initiative is currently an unknown quantity, but could have a huge impact on business models and research library interest in digitisation. Publishers who participated in this study are clearly concerned about the implications of Google for future commercial digitisation activities, while libraries are cautiously hopeful. The Google initiative has the potential not only to facilitate the digitisation of library materials for libraries, but for the existence of the digitised material to become easily discoverable through Google services. As mentioned by interviewees, the Google initiative will only be useful if material is digitised to an acceptable standard and if appropriate metadata is created for digitised material. If this is the case, and Google remains committed to the project, this initiative may well prove to be a significant boost for the digitisation of content. Whether this will be systematic



digitisation of content to meet needs or cherry picking of significant collections is another matter. CURL and/or the RLN could explore the possibility to taking a nationally co-ordinated approach to the inclusion of UK research libraries in this initiative in future.

While all of the business models explored in this study had disadvantages as well as advantages, it is clear from the various developments that there is increasing scope for public-private partnerships in digitisation.

13.8 A National Framework for Digitisation

It is clear from discussions with the various players in digitisation that there is a need for co-ordination in digitisation activities, even though they do not all agree on how this should be done. A co-ordinated approach would assist in filling gaps in provision. Librarians are dedicated to supporting researchers through digitisation and are often good judges of what will be useful, taking a long-term view. However, digitisation has hitherto been carried out in a piecemeal fashion. A UK-wide strategy could assist in filling gaps in provision, cut across the efforts of individual funders and digitising organisations, reduce overlaps between support services and assist in the provision, take up and use of open access resources. While librarians and archivists have sought to find and adhere to standards and JISC has supported this, a UK-wide approach would assist in overcoming institutional issues, such as successful project management being impeded by costs, varying file and metadata formats and preservation problems. A crucial aspect of any national strategy is that it should reflect researchers' priorities.

13.9 Summary of Recommendations

This chapter has set out a number of recommendations for action towards the development of a national strategy for digitisation. In summary these are:

1. The findings of this study point to the need for a national approach to digitisation and that this should be a federated and decentralised, rather than a centralised one.
2. The results of the British Academy survey should be studied and the implications for resource provision in the arts and humanities research community should be identified (CURL, RLN).
3. The JISC and research council ICT programmes should continue to focus on raising awareness and training and tools for using digitised content (JISC, AHRB, e-Science programme, etc.)
4. There needs to be a systematic survey of user needs, particularly in the sciences and social sciences. This could be carried through approaching research bodies, subject associations, the academies and the royal societies. Researchers are more likely to respond to research bodies than the RLN,



but the library community could help in encouraging RLN awareness and thus increasing its impact (JISC to discuss with Research Councils UK, RLN to discuss with associations and societies).

5. The findings of the user needs study should be shared with JISC and CURL and/or the Research Libraries Network so that the response to the findings and the roles undertaken by these players can be co-ordinated (Research Councils UK, JISC, CURL).
6. A comprehensive gap analysis should be undertaken (CURL, Research Libraries Network) in order to identify priorities for the digitisation of library material identified by this study
7. The research councils should further develop strategic programmes for funding resource creation, whilst retaining some funds for high quality speculative bids (Research Councils)
8. In consultation with research councils and other funders, JISC should decide on digitisation programmes it should support. Thus support could be in cooperation with other funders as some previous projects have been.
9. Alternative approaches to speed up and reduce the cost of metadata creation should be explored, including: funding body support for this activity, automation and possibly outsourcing (CURL, RLN, JISC)
10. The systematic provision of information on digitisation projects and digitised resources to a UK register should be explored (CURL, JISC, RLN). Such a system should be simple and inexpensive to maximise participation.
11. Funding bodies should include provision of information to digitisation registers as a condition of funding (Research Councils, JISC to discuss with other major funding bodies)
12. Improving discovery of digitised materials should be investigated (JISC and the MLA through the Common Information Environment). A UK Register of Digital Surrogates, similar to the National Register of Archives, could facilitate greater collaboration and cooperation.
13. Consolidation of existing support and advice services should be explored (JISC)
14. Use of standards should be encouraged and facilitated as far as appropriate (Common Information Environment)
15. The creation of a portal, or similar awareness mechanism, for up-to-date information on funding bodies and funding opportunities should be explored (CURL, JISC, RLN, MLA)
16. There is increasing scope for public-private sector partnerships. Opportunities to work with commercial partners in a way that benefits the sector should continue to be explored. A watching brief should be kept on the Google digitisation initiative. The involvement of UK research libraries in this could be co-ordinated at a national level (CURL, RLN)



17. The Digital Preservation Coalition should continue its work on raising awareness of digital preservation issues and could consider the provision of more case studies from its members and international contacts.
18. Funding bodies (if they do not do so already) and recipients of funding should consider the use of existing data archives to facilitate safe storage and preservation of digitised resources when planning and funding digitisation projects (JISC and CURL to discuss with funding bodies and research libraries respectively)
19. JISC should consider giving priority to funding digitisation of resources by publishers who are willing to make material available at no or low cost and negotiate hard with commercial publishers for access to very valuable digitised material. CURL should also lobby publishers on this
20. JISC and CURL should explore with other bodies, such as the research councils and other funding bodies how a national approach to digitisation could be co-ordinated, including the creation of a forum for sharing knowledge and developing policy and implementation plans.

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Appendix A

Web Questionnaire

Digital Content in the Library and Archive Sector Study UK Academic and Research Library and Archives Questionnaire

The Joint Information System Committee and the Consortium of Research Libraries have commissioned Loughborough University to undertake an investigation of digitised content available to the UK research community. This content includes material digitised by libraries, archives, publishers and other organisations.

The aims of the review include assessing what digitised material is available, standards used in digitisation, gaps in provision, collection management issues, the role of the private sector and partnerships between different sectors. The study will provide data to support the possible development of a national strategy in this area.

As part of this study, we are carrying out a survey of UK academic and research library and archive digitisation activities. We would be very grateful if you would complete this questionnaire, even if you have not been engaged in any digitisation activities. If you have any questions about the survey, please contact the team (see contact details at the end of the questionnaire or on the homepage).

The questionnaire consists of 35 questions and should take no longer than 20 minutes to complete.

Please tick the boxes and complete the fields as appropriate.



A. Background

- 1) What is the name of your library/archive?
- 2) What is your job title and role in the library/archive?
- 3) What role, if any, have you played in the digitisation of material from your collections? (Tick all that apply)

Developing policy/strategy
Curatorial (e.g. identifying content)
Project(s) Co-ordinator
Providing content to be digitised by other organisations
Project Manager
None
Other (please specify)

B. Current and Past Digitisation Activities

- 4) Has your library/archive been engaged in digitising material from its collections?

Yes
No Go to Question 6
No, but will in future Go to Section E
Other (please specify)

- 5) If a project/collection Web site or your digitisation strategy is publicly available, please provide a URL:

Now go to Question 7

- 6) What are the reasons for not digitising material? (Please tick all that apply then Go to Section E)

Insufficient demand
Insufficient funding
Limited knowledge/skills base
Limited technology base
Curatorial or preservation priorities
Insufficient commitment from library management
Other (please specify)

- 7) Why did you decide to digitise material? (If more than one reason applies, please rank your responses by importance, i.e. 1 = most important, 2 = second most important, etc.)

Improve access to unique material
Bring together material from different institutions
Reduce handling of originals
Save space
Commercial exploitation



Other (please specify)

8) What types of material have you digitised?

(Please tick all that apply.)

Material type

Journals

Newspapers

Manuscripts

Books pre1800

Books post 1800

Ephemera

Still Images

Moving Images

Sheet Music

Recorded Sound

Maps

Other (please specify)

9) What is the subject content of the material you are digitising?

(Please tick all that apply and specify more details)

Arts

Humanities

Social sciences

Religion

Sciences

Medicine

Technology

Other

10) What standards are used for digitised material?

a) File formats for preservation (e.g. TIFF, PDF, XML, etc, please specify)

b) File formats for access (e.g. PDF, XML, JPEG, etc, please specify)

c) Metadata (e.g. MARC, Dublin Core, METS, etc, please specify)

d) Subject access (e.g. subject headings, such as Library of Congress Subject Headings, classification system or thesaurus)

e) Unique identifiers (e.g. ISBN, ISSN, SICI, BICI, DOI, etc, please specify)

C. Digital Collection Management

11) What were/are the selection criteria for digitisation? (If more than one criterion applies, please rank your responses, e.g. 1, 2, 3, etc)

Demand

Coherent collection(s)

Age of material

Vulnerability

Uniqueness/rarity of items



Potential for commercial exploitation
Copyright/other IPR restrictions
Relevance to aims and objectives of the library/archive
Other (please specify)

12) Do metadata records exist for individual digitised items (e.g. individual books, manuscripts, maps, etc)?

Yes, for all items
Yes, for some items (please specify)
No

13) Is the material that has been digitised freely available?

Yes Go to Question 15
No

14) Why is digitised material not freely available? (Tick all that apply)

Access restricted within the institution Go to Question 16
Access is paid for
Copyright or other IPR restrictions
Other (please specify)

15) How is digitised material made available? (Tick all that apply)

Institutional Web catalogue
Web site listing
Consortium Web catalogue
Portal
Use search engine services (e.g. Google) to index content
OAI-PMH compliant
Other indexing or listing mechanism (please specify)
Not applicable

16) What sources of advice have you consulted in your digitisation activities?

(Tick all that apply)
Collection managers
Users
Internal technical experts
Copyright or other legal experts
TASI
HEDS
BUFVC
AHDS
TECHDIS
CETIS
Digital Curation Centre
None



Other (please specify)

17) Are your digitised collections accessible to users with special needs?

Yes

No

Don't know

Other (please specify)

18) How do you intend to preserve your digitised collections? (Tick all that apply)

Will copy material to new storage media

Will convert material to new formats

Will emulate material as appropriate

Don't know

Other (please specify)

19) What is the main source for funding digitisation activities?

Library/archive funds

External funding

Both internal and external funding

Don't know Go to Section D

20) Which external organisations fund your digitisation activities? (Tick all that apply)

Research Boards/Councils

National Lottery (e.g. HLF, NOF)

Joint Information Systems Committee (JISC)

Charitable or other trust (please specify)

Other (please specify)

Don't know

21) What are the funding models for externally funded digitisation activities? (Tick all that apply)

Funding body provides 100% funding

Funding body provides more than 50% of funding

Funding body provides less than 50% of funding

Don't know

Other (please specify)

22) Approximately how much funding have you received for projects that includes digitisation?

From library/archive or institutional funds

From external funding bodies

Other (please specify)

Don't know



D. Cooperative Digitisation Activities

- 23) Are all/some of your digitisation activities carried out with partners (e.g., other libraries, publishers, digitisation bureau)?**

Yes Go to Question 25

No

- 24) Would you be interested in working with partners?**

Yes

No Go to Section E

- 25) What types of organisation do/would you work with on digitisation activities? (Tick all that apply)**

Other libraries, archives or museums in the UK Go to Question 27

Other libraries, archives or museums in other countries Go to Question 27

Digitisation bureau

Commercial publishers (e.g. Gale, ProQuest, Elsevier)

(Please give the organisation's name if appropriate)

Other (please specify)

Not applicable Go to Question 27

- 26) What was the nature of the co-operation with the commercial supplier/ digitisation bureau? (Tick all that apply)**

Commercial company digitised library/archive material for own purpose with no benefit for the library/archive

Commercial company digitised library material for own purposes, library/archive benefited (e.g. free access, remuneration etc)

Library/archive received commercial funding to digitise material as part of a larger project

Bureau provided digitisation service for library/archive

Not applicable

Other, (please state)

- 27) Do you prefer to outsource digitisation rather than carry it out in-house?**

Yes (please specify why)

No (please specify why)

No preference

Don't know

Not applicable

- 28) What were the reasons for working with other partners? (Tick all that apply)**

Use/share expertise

Use/share technical equipment or infrastructure

Avoid duplication of effort

Benefit from economies of scale



Bring together disparate collections
Commercial exploitation of collections
Not applicable
Other (please specify)

29) How do you ensure quality control of cooperative digitisation activities? (Tick all that apply)

In house staff checking
External company
Automated processes
Not applicable
Other (please specify)

E. Future Plans

30) Is there any material in your collections that you are not currently digitising that you think should be digitised in the future including rare, unique or difficult to access material?

Yes
No Go to end
Don't know Go to end

31) What is this material? Please give details (e.g. names of collections, number of items, type of material)

32) Do you plan to digitise this material?

Yes
No
Don't know

33) How are you planning to fund future digitisation activities? (Tick all that apply)

Internal funding source
Working with commercial partner
Bid to external funding body (please specify if possible)
Other (please specify)

34) Why do you think this material should be digitised? (Tick all that apply)

Research value
Educational value
Part of the cultural heritage
Commercial value
Demand
Uniqueness/rarity of items
Currently difficult to access
Other (please specify)



You are invited to make any other additional comments here.

Thank you very much for the time you have taken to fill in this questionnaire.

The results of this study will be published on the JISC Web site.

We may make public a list of digital collections by institution. Do you agree for your institution to be named in this way?

YES NO

It would also be helpful if you could provide contact details for any follow-up questions and also so that we can send you the results of the study when it is completed. Personal details will be stored in compliance with the Data Protection Act 1998. They will be kept securely and used only for the purposes stated above.

Name:

Telephone:

Email:

Contact Details:

Clara Wictor lschmw@lboro.ac.uk

Department of Information Science, Loughborough, LE11 3TU

Appendix B

Dissemination of Web Questionnaire

Via CURL directors:

Dear All,

As you are already aware, the Joint Information System Committee and ourselves under the aegis of our Digital Content Creation & Curation Task Force <http://www.curl.ac.uk/about/GroupsDCCC.htm> have commissioned Loughborough University to undertake an investigation of digitized content available to the UK research community. Part of this research will be based on a questionnaire survey of digitisation activities in the HE library and archive sector.

The questionnaire is now active and can be found at <http://www-staff.lboro.ac.uk/~lsam2/index.htm> I would be grateful if you could forward this information to appropriate members of staff who will have been involved and are involved in digitisation projects.

Many thanks indeed for your help,
With best wishes,

Dr. Mike Mertens,
Database Officer & Deputy Executive Secretary,
Consortium of University Research Libraries (CURL)
Room 1211, 12th Floor
Muirhead Tower
The University of Birmingham
Edgbaston
Birmingham, B15 2TT

Tel: +44 (0)121 415 8107
Fax: +44 (0)121 415 8109
email: mike.mertens@curl.ac.uk

Appendix C

List of Interviewees

Date conducted	Organisation
30.11.2004	OCLC
3.12.2004	The Andrew W. Mellon Fdn
10.12.2004	The Wellcome Trust
15.12.2004	Elsevier
15.12.2004	Taylor & Francis
20.12.2004	ProQuest
20.12.2004	Gale
22.12.2004	UKOLN
22.12.2004	TASI
10.1.2005	Royal Chemical Society
11.1.2005	CDLR
11.1.2005	Digital Curation Centre
11.1.2005	Heritage Lottery Fund
12.1.2005	NLS
12.1.2005	SCRAN
12.1.2005	National Archive Scotland
13.1.2005	HERON
13.1.2005	Ingenta
13.1.2005	Blackwells
18.1.2005	London School of Economics
18.1.2005	MLA
19.1.2005	Oxford University Press



Date conducted	Organisation
19.1.2005	Oxford Digital Library
19.1.2005	Bodleian Library
20.1.2005	AHDS
20.1.2005	KDCS
20.1.2005	National Archives
21.1.2005	Royal Society
21.1.2005	AHRB
24.1.2005	National Library Wales
25.1.2005	JISC
26.1.2005	Sage Publishing
26.1.2005	Big Lottery Fund
2.2.2005	Cambridge University Lib.
7.2.2005	The British Library
7.2.2005	BBSRC
Email questions	Philological Society
Email questions	ALPSP

Total = 38

Appendix D

Letter to Interviewee Contacts

Dear

JISC/CURL Digital Content in the Library & Archive Sector study

The Joint Information System Committee and Consortium of Research Libraries Digital Content Creation & Curation Task Force has commissioned Loughborough University to undertake an investigation of digitized content available to the UK research community. This content includes material digitised by libraries, archives and publishers. The aims of the review includes assessing what digitised material is available, the standards currently used in digitization, gaps in provision, the role of the private sector and partnerships between different sectors.

The role of XXX in this context is significant and I am writing to enquire whether you would be available for a short meeting to discuss your organisation's activities in this area. The meeting would take no more than forty five minutes.

I was hoping to be able to meet you in the not too distant future and would like to suggest for example XXX or XXX. Please do suggest a different date or location should these not be convenient for you, or a colleague that I might contact instead.

I look forward to hearing from you.

Yours sincerely,

CURL/JISC Digital Content in the Library & Archive Sector study Team

Appendix E

Issues Discussed in Interviews:

- Digitised resources available
- Services offered
- Standards, formats and guidelines, existing policy
- Access to resources
- Funding structures
- Opportunities for digitisation projects
- Collaboration with publishers and others
- Strategic initiatives
- International initiatives
- Future plans
- Views of the future of digitisation and digitised resources

Appendix F

Tables of Resources

Key: **boldly printed resource names** denote evolving resources

Collections Created in the UK

Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
The Aberdeen Harbour Board Collection http://www.abdn.ac.uk/diss/historic/harbour/	Aberdeen harbour	glass plate negatives	collection; c. 6000 plates; comprehensive?	Aberdeen Harbour Board
Act of Union Virtual Library http://www.actofunion.ac.uk/	history	pamphlets, newspapers, manuscript material, art work	collection; n/a; [selective?]	NOF-digitise
Ann Griffiths website http://www.anngriffiths.cf.ac.uk/index.html	Ann Griffiths, Welsh language, poetry	letters, books	collection; n/a.; selective	Cardiff University
The Beazley Archive http://163.1.48.106/BeazleyAdmin/Script2/default.htm	archaeology	artefacts, books	collection; n/a; selective	AHRB
BL Newspapers 1800-1900¹ http://www.bl.uk/collections/britishnewspapers1800to1900.html	history	microfilm	collection; n/a; [aims to be comprehensive]	JISC
BL Sound Archive 20th Century http://www.bl.uk/collections/sound-archive/archsoundrec.html	history, ethnology, musicology	radio adverts, interviews, field recordings, music	collection; 3900 hours; selective	JISC



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
BL Treasures http://www.bl.uk/collections/treasures/digitisation3.html	religion, arts, history,	manuscripts, print	cluster; n/a; selective	individuals, foundations
Bodleian Library Broadside Ballads http://www.bodley.ox.ac.uk/ballads/ballads.htm	popular literary history, music history, social history, art history, printing history	printed sheets	collection; over 30000 ballads; comprehensive	NFF Specialised Research Collections initiative
BOPCRIS British official publications 1688-1995 http://www.bopcris.ac.uk/	history, politics, economics	print	collection; 36899 references; selective	RSLP +
Bristol BioMed Image Archive http://www.brisbio.ac.uk/index.html	medical science	slides, photographs?	collection; c. 8000 images; selective	JISC
The Brunel collection http://www.brunelarchive.org/	IK Brunel, architecture, engineering, history	plans, notebooks, sketchbooks, letters, calculations, drawings	collection; aims for 6500 pages; selective	AHRB
Cambridge University Library Digital image collections http://www.lib.cam.ac.uk/digital_image_collections/	science history, arts, history, Newton, Pascal	manuscripts, sketches, letters, book, photographs	cluster; n/a; selective	various
Census Data 1801-1937 http://www.histpop.org/	history, demography	print, manuscript material	collection; almost 20000 images; [complete?]	JISC
Charles Booth Online Archive http://booth.lse.ac.uk/	history, economics,	maps, notebooks,	collection; n/a; selective	RSLP
Charting the Nation http://www.chartingthenation.lib.ed.ac.uk/	Scotland, history of cartography, architectural history, genealogy, military history, environmental history, archaeology	maps	virtual collection; over 3500 images; selective	RSLP
CHILDE (Children's Historical Literature disseminated through Europe) http://www.bookchilde.org/index.htm	sociology, literature studies	printed book illustration	collection; 1000; selective	European Commission
Chopin's First Editions Online (CFEO)	musicology	music scores	collection; 4345 images planned; n/a	AHRB



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
Church Plans On-line http://www.churchplansonline.org/	architecture, history	plans	collection; 13000; [comprehensive?]	NOF
Collage (COrporation of London Library & Art Gallery Electronic) http://collage.cityoflondon.gov.uk/	architecture, art, topography, history, London	prints, drawings, maps	collection; over 20000 images; selective	Corporation of London
Collect Britain http://www.collectbritain.co.uk/collections/	history etc	prints, ms, wax cylinders, paintings, photographs, sound recordings, etc	collection; 90000 items; selective	NOF
Corpus vitrearum medii aevi http://www.cvma.ac.uk/	arts, history	photographs	collection; over 10000 images; selective	AHRB
The Correspondence of James McNeill Whistler http://www.whistler.arts.gla.ac.uk/correspondence/index.htm	James McNeill Whistler	letters (transcribed)	virtual collection; n/a; aims for comprehensiveness	British Academy Committee, AHRB, Getty Grant Program, John Sloan Memorial Trust, Patricia Cornwell Enterprises
The correspondence of William Henry Fox Talbot http://www.foxtalbot.arts.gla.ac.uk/	W.H. Fox Talbot	letters (transcribed)	virtual collection; nearly 10000 letters; comprehensive	AHRB, NEH, British Academy
Darwin correspondence project http://www.lib.cam.ac.uk/Departments/Darwin/	Charles Darwin, history of science	letters [transcribed?]	virtual collection; n/a; aims for comprehensiveness	NSF, National Endowment for the Humanities, Andrew E Mellon Foundation, Wellcome etc
Digital Archive of Medieval Music (DIAMM) http://www.diamm.ac.uk/	musicology	music manuscripts	collection; over 14000 images; selective	AHRB, Andrew W. Mellon Foundation
Digital Shikshapatri http://www.shikshapatri.org.uk/	Hinduism	manuscript	collection; c.1320 images; [comprehensive?]	NOF
The Drawn Sword: Engravings and woodcuts from the MacBean Jacobite and Stuart Collections http://www.abdn.ac.uk/diss/historic/collects/new_macbean/index.shtml	history	engravings, woodcuts	collection; ca. 1300; comprehensive?	University?



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
Early manuscripts at Oxford University http://image.ox.ac.uk/	history	manuscripts	collection; over 80 manuscripts; not all complete	HEF UK, (NFF Committee)
Enhanced British Parliamentary Papers on Ireland 1802-1922(EPPI) http://www.eppi.ac.uk/	Ireland, history	printed documents	collection; aims for 13700 documents; selective	AHRB
FARNE (Folk Archive North East) http://www.folknortheast.com	music, Northumbrian culture	manuscripts, books, music sheets, sound recordings, photographs	virtual collection; over 4000; selective	NOF
Gathering the Jewels http://www.gtj.org.uk/	Welsh, history, geography	photographs, sketches, letters, paintings, maps, artefacts, fossils	collection; over 20000 images; selective	NOF
The George Washington Wilson collection http://www.visualevidence.ac.uk/aberdeen/controller	photography,	glass plate negatives	collection; [40000?]; [comprehensive?]	RSLP
Gertrude Bell http://www.gerty.ncl.ac.uk/	Gertrude Bell	letters, diaries,	collection; n/a; selective	[University of Newcastle upon Tyne?]
Great Britain Historical Database Online http://hds.essex.ac.uk/gbh.asp	history, demographics	census data and other statistics	virtual collection; n/a; [selective?]	AHDS
Historical Directories http://www.historicaldirectories.org/hd/index.asp	history, genealogy,	local and trade directories from England and Wales, 1750-1919	collection; n/a; selective	NOF
Hortus Nitidissimus http://www.kew.org/data/trew/home.do	history, botanics	printed florilegium	collection; n/a; [comprehensive?]	Andrew W. Mellon Foundation
Imperial War Museum Online Collection http://www.iwmcollections.org.uk/	war, British history, Commonwealth	sound recordings, photographs, posters, letters, pamphlets, objects	collection; over 3000 images; selective	[donations?]
Institute of Physics Journal Archive http://www.iop.org/EJ/main/-list=all/	physics, history of science	journals	collection; over 100000 articles; comprehensive	IOP



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
International Dunhuang Project (IDP) http://idp.bl.uk/	history, sinology	manuscripts, paintings, artefacts	collection; > 40000 entries; n/a	AHRB, HEFCE, British Academy, British Council, HLF, Leverhulme, Mellon and many others
Internet Library of Early Journals (ILEJ) http://www.bodley.ox.ac.uk/ilej/	history	journals, microfilm	collection; [80000?]; selective	[Universities of Birmingham, Leeds, Manchester and Oxford]
Internet Mission Photography Archive http://www.usc.edu/isd/archives/arc/digarchives/mission/	history	photographs	virtual collection; n/a; selective	[internal?]
John Foxe's Book of Martyrs http://www.hrionline.ac.uk/foxe/	Christian theology	books	virtual collection; n/a; comprehensive	British Academy
The John Johnson Collection of Printed Ephemera http://www.bodley.ox.ac.uk/johnson/johnson.htm	history	printed ephemera	collection: 2198; selective	JISC (JIDI)
LSE Pamphlet Collection http://www.lse.ac.uk/library/pamphlets/#generated-subheading4	history, politics, economics, transport	pamphlets, microfilm	collection; n/a; selective	JISC
Medical Journals Backfile Digitization Project http://library.wellcome.ac.uk/node280.html	medical science, history	journals	collection; n/a; comprehensive	Wellcome Trust, JISC
Moving here: 200 years of migration to England http://www.movinghere.org.uk/	history, migration	photographs, personal papers, government documents, maps, artefacts, sound recordings, video clips	virtual collection; n/a; selective	NOF/BLF
The Music of James Scott Skinner http://www.abdn.ac.uk/scottskinner/	James Scott Skinner, music	manuscripts, sound recordings, video	collection; [c. 800?]; selective	Big Lottery Fund
National Fairground Archive Image database http://hri.shef.ac.uk/fairground/index.html	fairgrounds, history	images	collection; 1000; selective	HLF, The Pilgrim Trust



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
The National Gallery Collection online http://www.nationalgallery.org.uk/collection/default_online.htm	fine arts	paintings	collection; n/a; selective?	Donations etc?
National Library of Scotland Digital library http://www.nls.uk/digitallibrary/index.html	Scotland, history, literature, performing arts	maps, broadsides, photographs, letters, diaries, manuscripts, playbills	cluster; n/a; selective	[Government?]
National Library of Scotland Digital library http://www.nls.uk/digitallibrary/index.html	Scotland, history, literature, performing arts	Maps, broadsides, photographs, letters, diaries, manuscripts, playbills	cluster; n/a; selective	[Government?]
National Library of Wales treasures http://www.llgc.org.uk/drych/drych_s004.htm	Wales, various	manuscripts, books, photographs, maps pictures	cluster; n/a; selective	internal
Newsfilm Online http://temp5.bufvc.ac.uk/newsfilmonline/public_html/index.php	History, communication, etc (requested subjects)	newsfilm, microfilm,	collection; aim: up to 60000 items; selective	JISC
The Newton project http://www.newtonproject.ic.ac.uk/index.html	Isaac Newton	manuscripts	collection; n/a; selective	AHRB, CORDIS, Royal Society
The Papers of Thomas Reid http://www.abdn.ac.uk/diss/historic/Thomas_Reid/index.html	Thomas Reid	manuscript material	collection; n/a; [comprehensive?]	Specialised Research Collections in the Humanities (NFF)
PotWeb http://potweb.ashmol.ox.ac.uk/	ceramics, archaeology, history, art history	ceramics	collection; n/a; selective	various sources
Proceedings of the Old Bailey London 1674 to 1834 http://www.oldbaileyonline.org/	history, jurisdiction	[print?]	collection; 100,621 trials; comprehensive	AHRB, NOF, University of Hertfordshire, University of Sheffield
Robert Boyle Project http://www.bbk.ac.uk/Boyle/	Robert Boyle	manuscript	collection; c. 2500; [selective?]	HLF, Royal Society
SCRAN (Scottish Cultural Resources Access Network) http://www.scran.ac.uk/	human history, material culture	images, movies, sounds	collection; "over 300000 images, movies and sounds"; selective	JISC, NOF, Millennium Commission



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
Statistical accounts of Scotland http://edina.ac.uk/stat-acc-scot/	statistics	parish report	collection; 28000 pages; n/a	JISC (digitisation); Carnegie Trust, NAS, Friends of Glasgow University Library, Gannochy Trust (conversion to searchable text), SLIC, NLS
Portcities UK http://www.portcities.org.uk/	history	artefacts, paintings, maps, photographs, sound clips	virtual collection; n/a; selective	NOF
RSC Journal Archive	chemistry, history of chemistry	journals	collection; over 200000 articles; comprehensive	RSC
Scotland's People ² http://www.scotlandspeople.gov.uk/	Scottish history, genealogy	parish register, civil registration and census records	collection; "over 40 million records in database"; comprehensive	General Register Office for Scotland
SINE (Structural Images of the North East) http://sine.ncl.ac.uk/index.asp	architecture, history,	photographs, slides, sketches, paintings, etchings, drawings	virtual collection; [c. 18000 images]; selective	NOF
Tate Collection http://www.tate.org.uk/servlet/BrowseGroup?cgroupid=999999956	art	paintings, artefacts, photographs	collection; over 65000 items; comprehensive	internal?
The Thomas Gray Archive http://www.thomasgray.org.uk/index.shtml	Thomas Gray	print	collection; c. 900 [comprehensive?]	?
TileWeb http://tileweb.ashmolean.museum/	architectural ceramics	watercolours	virtual collection; c.6000; [comprehensive?]	Millennium Commission, Manifold Trust, The Census of Medieval Tiles
Tomorrow's history http://www.tomorrows-history.com/	history, North East of England	books, maps, photographs, prints	virtual cluster; >30000; selective	HLF, Millennium Festival Fund
The Union makes us strong www.unionhistory.info	social history	book, photographs, artefacts	collection; n/a; selective	Big Lottery Fund
Vindolanda tablets online http://vindolanda.csad.ox.ac.uk/	archaeology, history, classics	wooden writing tablets	collection; n/a; comprehensive	Andrew W. Mellon Foundation



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
Vision of Britain www.visionofbritain.org.uk	history, statistics, geography, demography	census records, maps, printed travel accounts	collection; over 48000 units; selective	Big Lottery Fund, Leverhulme Trust, ESRC, JISC, Wellcome Trust and others
Visual Evidence http://www.visual-evidence.ac.uk/	photography, history, geography	photographs	collection; almost 100000 images; selective	RSLP
The Warburg Institute Library Digital Collection http://www.sas.ac.uk/warburg/mnemosyne/DigitalCollections.htm	Medieval and Renaissance studies	books	collection; 113 items; selective	internal
The Wilfred Owen Multimedia Digital Archive http://www.hcu.ox.ac.uk/jtap/	Wilfred Owen, poetry, World War I	manuscript, photographs, audio, video	virtual collection; n/a; [selective?]	JISC

Inventories Created in the UK

Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
AHDS http://ahds.ac.uk/collections/index.htm	arts, humanities	various	repository	Various (AHRB, British academy)
DSpace@Cambridge http://www.dspace.cam.ac.uk/	archaeology, chemistry, musicology, philosophy, economics etc (expanding)	photographs, (also born digital material)	repository	Cambridge-MIT Institute
EDINA's Scottish gathering list http://edina.ac.uk/scotland/	geography, statistics	images, datasets, statistical records, maps	repository	JISC
EnrichUK: portal to NOF-funded websites with digitised collections www.enrichuk.org.uk	mostly non-science	various	gateway to 150 collections ³	NOF
ESDS Qualitative research data http://www.essex.ac.uk/qualidata	social science	datasets (also born digital material)	repository	ESRC



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
Glasgow Digital Library http://gdl.cdlr.strath.ac.uk/	Glasgow, history, architecture, politics	political ephemera, letters, photographs, artefacts, books, parliamentary papers, papers	cluster; n/a; selective	RLSP, SCRAN, RLS (digitisation)
Oxford Digital Library http://www.odl.ox.ac.uk/collections/index.html	various	various	inventory	[Mellon?]
Oxford Text Archive http://ota.ox.ac.uk/	literature, languages, linguistics	manuscript and printed text	repository	JISC, Oxford University Computing services, AHRB
TASI Image Sites http://www.tasi.ac.uk/imagesites/images.html	various	various	Gateway/portal with search functionality	Interface: JISC (individual projects are funded by various bodies)

Collections Created Outside the UK

Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
Access to Archival Databases (AAD) http://www.archives.gov/aad/	American	public electronic records		USA [Government?]
African Online Digital Library http://www.africandl.org/	West Africa, South Africa, language, culture	photographs, interview, publications	cluster	USA/Senegal International Development Research Centre, NSF
American Memory http://memory.loc.gov/ammem/	history	maps manuscripts motion pictures sheet music photos prints sound recordings printed texts	cluster	USA public and private
Artamène ou le Grand Cyrus http://www.artamene.org/	French Literature	book, maps	collection	Switzerland Fonds national Suisse de la recherche scientifique
ArtSTOR (only accessible in USA currently) www.artstor.org/	Asian art, American art, architecture, design	colour transparencies, colour slides, b&w photographs, artefacts, paintings etc	virtual collection	USA Andrew W. Mellon Foundation, JISC



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
Australian periodical publications 1840-1845 http://www.nla.gov.au/ferg/	various, Australia	microfilm	virtual collection	Australia Australian research council
Bartleby: great books online http://www.bartleby.com/	various reference	books	cluster	USA? commercial
Biblioteca nacional de España http://www.bne.es/eng/bidigital.htm	history, iconography, Goya, cartography, literature	various	cluster	Spanish Government?
Biblioteca Virtuale On-line (BIVIO) http://www.bivionline.it/	Renaissance Literature	books	collection	Italian Government
Bielefeld University Library: Digital Full Texts http://www.ub.uni-bielefeld.de/english/diglib/	history, literature,	autographs, print and manuscript material	cluster	Germany Universität Bielefeld
Collections of the electronic library http://www.ndl.go.jp/en/data/endl.html	Japanese history and culture	books, images	cluster	Japan [Government?]
Cornell University Library Windows on the Past http://historical.library.cornell.edu/	mathematics, history, Cornell, witchcraft	books, pamphlets, letters	cluster	USA NSF,
David Rumsey Map Collection http://www.davidrumsey.com/	geography, history, cartography	maps, atlases	collection	USA [Commercial?]
Digital Scriptorium http://sunsite3.berkeley.edu/Scriptorium/	codicology	manuscripts	virtual collection; c. 15000 images; selective	USA Andrew W. Mellon Foundation , NEH, Gladys Kriebel Delmas Foundation
Digitales Turfan-Archiv http://www.bbaw.de/forschung/turfanforschung/dta/index.html	philology	manuscripts	collection; c. 12000 images	Germany DFG
Documenting the American South http://docsouth.unc.edu/	history, literature, culture	manuscript and print material, posters, artefacts, letters, interviews, songs, photographs	cluster	USA UNC University Library
Early Canadiana Online (ECO) www.canadiana.org/	Canada, history, women, religion, natives	microfiche, government publications	virtual collection; >1789000 pages	Canada donations and subscriptions



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
Early English Books Online (EEBO) http://eebo.chadwyck.com/home	English literature, history, philosophy, linguistics, theology, music, fine arts, education, mathematics, science	microfilm	collection; about 100000 titles	USA ProQuest
Eighteenth Century Collections Online (ECCO) http://www.gale.com/EighteenthCentury/	architecture, art, fine arts, geography, history, language, law, literature, medicine, music, philosophy, religion, science, social sciences, technology	microfilm	collection	USA Thomson Gale
Exilpresse digital: Deutsche Exilzeitschriften 1933-1945 http://deposit.ddb.de/online/exil/exil.htm	history, politics	periodicals	collection; 30000 issues; selective	Germany DFG
Forced migration online http://www.forcedmigration.org/	refugee studies	grey literature, photographs	virtual collection; n/a; selective	UK, USA, Czech Republic, Egypt Mellon, EU
Gallica http://gallica.bnf.fr/	history, science, economics, law, literature, arts, architecture etc	books, photographs, manuscripts, sound recordings, journals, sketches, microfiche	cluster	French Government
GDZ Digital Collections http://gdz.sub.uni-goettingen.de/en/index.html	history of science, literature	books, journals	cluster	Germany DFG, State Ministry for Science and Culture
Gutenberg digital http://www.gutenbergdigital.de/gudi/start.htm	printing, Gutenberg	print	collection	Germany [internal?]
Huntington archive of Buddhist and related art http://kaladarshan.arts.ohio-state.edu/	Asian studies	slides, photographs	collection	USA Battelle Endowment for Technology and Human Affairs, Preservation and Access Division of the National Endowment for the Humanities, Web Media Collective, College of the Arts at The Ohio State University
Irish Script On Screen (ISOS) http://www.isos.dias.ie/	Irish language, culture	manuscripts	collection	Dublin Institute of Advanced Studies



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
JSTOR http://uk.jstor.org/	business (46 titles) ecology & botany (29) general science (7) language & lit (57) maths & stats (30) music (32); multidisciplinary collection "arts & sciences"	printed scholarly journals	collection	USA Andrew W. Mellon Foundation
Literature Online http://lion.chadwyck.com/	literature and criticism	books	collection	USA Chadwyck-Healey (ProQuest)
Making of America http://www.hti.umich.edu/m/moagrp/	American social history	books, journals	collection	USA Andrew W. Mellon Foundation
The memory of the Netherlands http://www.geheugenvannederland.nl/gvnnl/all/index.cfm/language/en	Dutch social history	paintings, drawings, posters, pamphlets, atlases, films, audiovisual productions etc	cluster c. 331000 objects	Dutch Government
National Library of Australia Online Exhibitions http://www.nla.gov.au/exhibitions/online.html	various	various	cluster	Australia [Government?]
National Library of New Zealand: digital collections http://www.natlib.govt.nz/en/digital/index.html	various	various	cluster	New Zealand [Government?]
Project Gutenberg http://www.gutenberg.org/	various	books, music, films	collection; >13000 books; selective	USA donations
Project Muse http://muse.jhu.edu/	arts, humanities, social science	peer-reviewed scholarly journals	repository	USA Johns Hopkins University Press, Milton S. Eisenhower Library
Project Runeberg http://runeberg.org/	Nordic literature	books	repository; 444 books; selective	Sweden donations
Saganet http://saga.library.cornell.edu/	Icelandic medieval literature	manuscripts, books	virtual collection; >390000 images	Iceland, USA Andrew W. Mellon Foundation and other



Resource Name	Subject Areas	Original Materials	Structure; Size; Comprehensiveness	Funding body
ScienceDirect www.sciencedirect.com/	exact sciences	peer-reviewed scholarly journals	collection	Netherlands Elsevier
Smithsonian Institute www.si.edu/	various	photographs, objects	cluster	USA Donations
The Henry Ford Collections http://www.hfmgy.org/collections/default.asp	Americana	artefacts and print documents	collection	USA
The Perseus digital library http://www.perseus.tufts.edu/	literature, Classics	prints, maps, photographs, artefacts	virtual collection	USA Digital Libraries Initiative Phase 2, NEH, NSF, Institute of Museum and Library Services, private donations, Tufts University
Vestnord http://www.aviisitoqqat.gl/	various	newspapers, periodicals	virtual collection; 538671 pages	Faeroe Islands, Greenland, Iceland NORDINFO (The Nordic Council for Scientific Information), RANNÍS (The Icelandic Research Council), Student's Innovation Fund
Visual collections: images of art, history and culture http://www.davidrumsey.com/collections/index.html	art, history, cartography, architecture, photography,	paintings, photographs, scrolls, posters, slides	cluster; >300000 images	USA Commercial
William Blake archive http://www.blakearchive.org.uk/	art, literature	transparencies, slides	virtual collection	USA LoC + others

Inventories Created Outside the UK

Resource	Subject Areas	Material	Structure	Created in Funded by
ARL Digital Initiatives Database http://www.arl.org/did/	various	various	inventory	USA ARL
Australian digitisation projects http://www.nla.gov.au/libraries/digitisation/	various	various	inventory of "digitisation projects undertaken by Australian cultural organisations"	Australia NLA



Catalogue des fonds numérisés http://www.culture.gouv.fr/culture/mrt/numerisation/fr/f_02.htm	various	various	inventory	France Ministry of Culture and Communications
Heritage Colorado Collections http://www.cdpheritage.org/heritage/index.html	cultural heritage of Colorado	various	gateway	USA
Das digitale Zeitschriftenarchiv http://www.digizeitschriften.de/digizeit/index.html	linguistics, sociology, natural sciences, economics, law, history, library science	journals	archive "over 1 million pages"	Germany DFG
DLF/OCLC Registry of digital masters http://www.oclc.org/digitalpreservation/why/digitalregistry/	various	various	inventory	USA [WorldCat subscriptions?]
EROMM (European Register of Microform Masters and Digital Surrogates) http://www.eromm.org/ (access to database requires registration)	various	various	inventory	Germany [partners and sales?]
Funded Projects in the DFG Program Retrospective Digitisation of Library Holdings http://gdz.sub.uni-goettingen.de/en/index.html (frames! see left bar "DFG projects")	various	various	inventory	Germany DFG, Lower Saxony State Ministry for Science and Culture
Inventory of Canadian digital initiatives http://www.collectionscanada.ca/initiatives/index-e.html	various	various	inventory of "web content relevant to Canadians"	Canada Government
Kramerius http://kramerius.nkp.cz/	various	periodicals, manuscripts, prints	inventory	Czech Republic Government
Memoria project http://www.memoria.cz/	various	maps, manuscripts,	inventory	Czech Republic Government, sponsors
UNESCO/IFLA Directory of digitized collections http://www.unesco.org/webworld/digicol/	various	various	inventory	International [UNESCO?]
Memory of the World Register http://www.unesco.org/webworld/mdm/register/index.html	"documentary heritage"	various	portal/gateway	International UNESCO



New York Public Library Digital Gallery http://www.nypl.org/digital/	various	audiovisual, photographs, maps, prints, manuscripts	cluster	USA
Picture Australia http://www.pictureaustralia.org/	Australia	photographs, slides,	gateway	Australia [Government?]
Register of Digital Initiatives (RoDI) http://ndf.natlib.govt.nz/register/register.htm	various	various	inventory	New Zealand National Digital Forum
RLG Cultural Materials http://culturalmaterials.rlg.org/	various	various	inventory	USA [Subscriptions?]
Universal Digital Library (Million book project) http://www.dli.ernet.in/ , http://www.ulib.org , http://www.ulib.org.cn	various	books	virtual collection	USA, India, China Carnegie Mellon, NSF,
Windows on the past http://historical.library.cornell.edu/	various	various	inventory	USA internal

Appendix G

Data on completed and ongoing digitisation projects provided by interviewees

Blackwell

Digitisation of own periodicals

The Bodleian Library

Broadsides, large number of manuscript digitisation, cf ODL at

<http://www.odl.ox.ac.uk/collections/index.html>

The British Library

The British Library has provided a detailed list. Less than 1% of its 150 million holdings digitised

The digitisation register appears not to have been updated recently.

Completed Projects

Academy of Armory

CD-ROM

Living and working in 17th Century England - Randle Holme's Academy of Armory

Amaravati sculptures

www.bl.uk/collections/mackenzie.html

The digitisation of the Mackenzie Amaravati Album (WD1061)

Anglo-Saxon charters

www.trin.cam.ac.uk/chartwww/

Digital images of both sides of 199 original Anglo-Saxon charters held in the Dept of MSS.

Bach Digital

www.bachdigital.org/bd_uk/index1.html

Autographs and related material from various collections have been digitized and collected together in a single virtual environment



Beowulf

CD-ROM

Whole of Cotton Vitellius A XV manuscript (British Library), with images from material housed at : Royal Library - Copenhagen, University Kansas, and Harvard University

Canterbury Tales (Caxton and Chaucer)

www.bl.uk/treasures/caxton/homepage.html

The digitisation of the first and second Caxton edition of Chaucer's Canterbury Tales.

DIAMM

www.diamm.ac.uk

Digital Image Archive of Medieval Music

Early English Books Online

<http://eebo.chadwyck.com/home>

ECCO (18th C Collection Online)

<http://www.galegroup.com/EighteenthCentury>

120,000 eighteenth century english language titles included in Gales ECCO product

Gutenberg

<http://prodigi.bl.uk/gutenbg/default.asp>

The two BL copies of the Gutenberg Bible, an indulgence and a fragment of a school text printed with the same type.

Images Online

<http://www.imagesonline.bl.uk/britishlibrary/>

Medieval Maps

Medieval map manuscripts on vellum, illuminated (Cot. Tib. B.v, Roy 14.C.ix, Add 28681

Morte d'Arthur

Earliest mss of middle english classic, Malory's Morte d'Arthur

Newspapers (OliveSoft)

www.uk.olivesoftware.com

18 reels of duplicate negative microfilm were supplied for scanning, OCR, and indexing by the Olivesoftware product "Active Paper Archive". The content within these reels was of four national newspapers titles, with quarterly or half-yearly runs of each title being selected for the years 1851, 1856, 1886, 1900, 1918. Future hosting of the data remains outstanding, as KCL host access to the data.

NOF - Moving Here

www.movinghere.org.uk/

Collaborative project with National Archives



Russian Visual Arts

hri.shef.ac.uk/rva/index.html

Images from Russian printed books and journals

Turning the Pages

<http://www.bl.uk/collections/treasures/digitisation1.html>

Current Projects

Archival Sound Recordings

<http://www.bl.uk/collections/sound-archive/archsoundrec.html>

12,000 items totalling 3,500 hours of segmented recordings and associated images accessible to HE/FE users over the web.

Bindings

<http://prodigi.bl.uk/bindings/index.asp>

Images and metadata relating to bookbindings on Western European printed books. 8,000 bindings expected.

British Newspapers 1800 - 1900

<http://www.bl.uk/collections/britishnewspapers1800to1900.html>

1.8 million pages of British national, regional and local newspapers covering the period 1800 to 1900

Bulgarian Academy of Science

Funding awarded. Project due to start Oct 2003

Burney

OCR & Delivery being planned

Page images digitised from the microfilm of the Burney collection of London newspapers from the 17th and 18th centuries, accompanied by a searchable database of newspaper titles, dates and issue details.

Chopin

An online resource of all first impressions of Chopin's first editions and selected pages of later impressions thereof, with analysis of distinctive features.

Collect Britain [completed?]

<http://www.collectbritain.co.uk/>

Maps, manuscripts, topographical drawings, photographs, rare sound recordings and even long-forgotten advertisements and music-hall songs that chart the changing face of Britain and her people



DigCIM

<http://prodigi.bl.uk/illcat/welcome.htm>

Electronic catalogue of all 9,500 western illuminated mss in the BL. Descriptions of each ms, accompanied by on average 2 images per ms (some, the better-known items, will have many, others only one image). At the current level of human resource (as established through the AHRB bid), the entire project to run for approx. 13 years (depending on further funding).

Digital Athenaeum

Whole of Cotton Otho B X and other Cotton manuscripts in the British Library

Durham Liber Vitae

To provide digitised images of the Durham Liber Vitae, which is part of a larger project to provide a digitised facsimile, transcripts, translations and other commentary. Partners are Durham University and the Centre for Computing in the Humanities at King's College London. Project Duration 1.3.03 - 28.2.06

Early Buddhist MSS

European Festival Books

Evanion (non-NOF)

IDP [completed?]

<http://idp.bl.uk> and <http://idp.nlc.gov.cn>

An international collaboration to bring together manuscripts and printed documents in the British Library Stein and other Central Asian collections worldwide comprising over 100,000 items and more than a million images, historic and modern photographs of the area, Stein maps, and full scholarly material including catalogues, bibliographies and personalized project space.

Malay Seals

Octavo (Shakespeare Quartos)

<http://www.bl.uk/treasures/shakespeare/homepage.html>

The BL's complete collection of Shakespeare Quartos, will appear on BL's website and as a charged for item on Octavo website

Photographically illus. books

Available in rare books reading room

Photographs from photographically illustrated books 1839 to 1914

Rinascimento virtuale (Greek palimpsests)

Pilot website www.rrz.uni-hamburg.de/RV/

Greek Palimpsests, 30+ partners across Europe. University of Hamburg leading the project and will host the website.

Z-Safe mss digitisation



Cambridge University Library

complete list of digitisation projects at: http://www.lib.cam.ac.uk/digital_image_collections/

"The Medical School is making available various digital materials and I know that the English faculty making available [inaudible] the history collections and this ties in again with manuscripts."

Gale

ECCO, Times digital archive and rest of catalogue

JISC

Shakespearean material being digitised for FE, basically a learning and teaching package

National Archives of Scotland

"The wills and testaments, essentially, the websites lists 600,00 index entries in terms of bound volumes so we must have digitised about 5000 volumes. And about three million images."

National Library of Scotland

The Scotsman
Scottish photographs
Scotia Depicta
OS map of the 1840s to 1870s
Caledonia

National Library of Wales

Projects completed or due to be completed by 31 March 2005 (position on 11 February 2005)

By type of material (each set except exhibitions in chronological order):

ARCHIVES

Completed:

Ystrad Marchell (Wynnstay Estate Records)
Medieval charters of the Cistercian abbey of Ystrad Marchell (Strata Marcella), near Welshpool

Witchcraft (Court of Great Sessions Records)
Testimony given in cases of witchcraft in seventeenth-century Flintshire

St Asaph Notitiae (SA/MISC/1300-1491)
A survey of the population of the St Asaph diocese in the 1680s

Vestry book (Lampeter parochial records 1)
The vestry book of the parish of Lampeter for the period 1777-1803

Collectanea Menevensia (SD/Ch/B27-28)
Two volumes, 1820, documenting the history of the diocese of St David's



The National Anthem (Evan James MS 1)
The earliest copy of *Hen wlad fy nhadau*

Lloyd George diary (William George Papers 6)
The diary of David Lloyd George (1863-1945) for the year 1886

Lloyd George letters (William George Papers 10-3301)
Letters from David Lloyd George to his brother, William

In progress:

Probate
190,000 wills proved in the probate courts of Wales up to 1858

EXHIBITIONS:

Completed:

Architecture of Wales
Architectural drawings in The National Library of Wales

Campaign!
Political and social campaigning 1900-2000

Celtic Voices
The culture of the six Celtic nations as represented in the Library's collections

Thomas Jones, Pencerrig
The life and work of the talented artist, Thomas Jones, Pencerrig (1742-1803)

Lloyd George
Public and private aspects of the life of David Lloyd George (1863-1945)

Thomas Pennant
The life and work of Thomas Pennant (1726-1798), naturalist and antiquarian

Tower Colliery (Photo Album 2376-8)
A photographic document by Roger Tiley of the lives of the Tower miners over a period of one year

Voix Celtes
A French version of the Celtic Voices exhibition

Work and play
Everyday life through the eyes of the artist

In progress

Agriculture
A view of farming history in 2004, the centenary year of the Royal Welsh Show

Keltische Stimmen
A German version of the Celtic Voices exhibition



Migration

The story of migration from Wales to all parts of the globe

Wales 1904 and the Revival

A glimpse of Wales at the time of the great religious revival of 1904-1905

MANUSCRIPTS

Completed:

Medieval Astronomy (NLW MS 735C)

The oldest scientific manuscript in the Library, which contains various Latin texts on astronomy

Black Book of Carmarthen (Peniarth MS 1)

One of the earliest surviving manuscripts written solely in the Welsh language

Laws of Hywel Dda (Peniarth MS 28)

A Latin version of the native Welsh law with a series of illustrations in the text

Hendregadredd manuscript (NLW MS 6680B)

The earliest collection of the works of the Gogynfeirdd, the Welsh court poets

Book of Taliesin (Peniarth MS 2)

One of the most famous Welsh manuscripts containing some of the oldest poems in the Welsh language

White Book of Rhydderch (Peniarth MS 4)

The earliest compendium of prose texts in the Welsh language including the earliest version of the Mabinogion

The 'Hengwrt Chaucer' (Peniarth MS 392D)

History of one of the most important surviving texts of the work of Geoffrey Chaucer (before 1346-1400)

A Middle English Miscellany (Brogyntyn MS ii.1)

One of the most important medieval English manuscripts at the Library

Black Book of Basingwerk (NLW MS 7006D)

The history of the composite manuscript which was put together and, for the most part, written by the Welsh poet Gutun Owain (fl. 1460-1500) and traditionally associated with Basingwerk Abbey, Flintshire

Beunans Meriasek (Peniarth MS 105B)

A metrical play in Middle Cornish telling the story of Saint Meriasek from Brittany

Beunans Ke (NLW MS 23849D)

An incomplete copy of a play in Middle Cornish which recounts the story of Saint Ke



Payments to a serving maid (NLW MS 11431B)

A manuscript shedding light on the subject of working women's dress circa 1600

Morgan Llwyd (NLW MS 11431B)

Unfinished dialogue in the hand of Morgan Llwyd (1619-1659), author and mystic

History of the Gwydir family (NLW MS 23289B)

A copy, 1669, of 'History of the Gwydir family' by Syr John Wynn (1553-1627)

Smuggler's autobiography (NLW MS 21834B)

Remarkable life of William Owen of Nevern, Pembrokeshire, executed in 1747 for murder

Goronwy Owen (NLW MS 11568B)

A poem by Goronwy Owen (1723-1769), one of Wales's most important 18th-century poets

Williams Pantycelyn (NLW MS 77A)

Religious poetry in the hand of William Williams (1717-1791), Wales's most eminent hymnwriter

Early tourists (NLW MSS 22753B and 1340C)

Two well-to-do visitors from England tell of their travels in Wales

Jinny Jenks, 'Tour through Wales', 1772

Thomas Martyn, 'A tour to south Wales', 1801

History of the British Bards (NLW MS 13107B)

Notes by Iolo Morganwg (Edward Williams, 1747-1826) about bards and druids

Ann Griffiths (NLW MS 694D)

A letter in the hand of Ann Griffiths (1776-1805), hymnwriter.

Temperance (NLW MS 8323B)

Minute book and other records of Aberystwyth Auxiliary Temperance Society which was formed in 1835

Cardiganshire criminals (NLW MS 23203B)

Register of criminals apprehended Cardiganshire Constabulary between 1897 and 1933

Dylan Thomas (NLW MSS, reference number to be confirmed)

Map of Llareggub drawn by Dylan Thomas (1914-1953) in composing *Under Milk Wood*

In progress:

Dafydd ap Gwilym

More than twenty manuscripts which contain some of the work of this 14th century poetic genius



Black Book of Basingwerk (NLW MS 7006D)

The digital copy of the composite manuscript mentioned above

Piers Plowman (NLW MS 733B)

An important text of the work by William Langland (1330?-1400?)

Sir William Logan (NLW MSS 21715-16B)

Two journals of Sir William Logan (1798-1875), geologist

Letters from America and Australia (NLW MS 22846D)

Letters of a brother and sister, who emigrated from Llanfihangel-y-Pennant, Merionethshire, circa 1850

American Civil War (NLW MS 22421D)

Letters in Welsh, 1862-1864, relating a soldier's experiences during the American Civil War

MAPS

Completed:

Thomas Taylor (Atlas 5210)

The Principality of Wales exactly described [...], 1718, the first published atlas relating entirely to Wales

Lewis Morris and William Morris (Map 6328; Atlas 5209)

Charts of the Welsh coastline by Lewis Morris (1701-1765) and his son, William

In progress

Printed maps of Wales up to 1837

The Library's collection of some fifty maps of the whole of Wales published up to 1837

PHOTOGRAPHS

Completed:

Margam Castle Daguerreotype (Photo Album 1074)

The earliest Welsh photograph taken by the Reverend Calvert Richard Jones (1802-1877), Swansea

Mary Dillwyn Album (Photo Album 3900)

Album of early photographs, including the work of Mary Dillwyn (1816-1906) of Penlle'r-gaer

Carleton E Watkins (Photo Album 542)

An album by Carleton E Watkins (1829-1916), one of the finest American landscape photographers of the nineteenth century



John Thomas

The land and people of Wales through the lens of John Thomas (1838-1905),
Liverpool

Senghennydd disaster (Photo Album 1863)

Series of postcards depicting the worst pit disaster in the history of the Welsh
coal industry, 1913

Geoff Charles

Phase 1 of the immense archive of the photojournalist Geoff Charles (1909-
2002)

In progress

Geoff Charles

Phase 2 of the immense archive of the photojournalist Geoff Charles (1909-
2002)

Early photography in Swansea

Five volumes of photographs taken by some of the pioneers of photography

PICTURES

Completed:

Journey to Snowdon (PD9872)

Volume 6 of this extra-illustrated version of 'A tour in Wales' by Thomas
Pennant (1726-1798)

Ingleby watercolours (PD9083-9253)

Views in north Wales and the Marches by John Ingleby (1749-1808)

Thomas Rowlandson (PD9357-9406 et al.)

Welsh landscapes and other subjects by Thomas Rowlandson (1756-1827)

Turner and Wales (CC/04; CC/01)

Two landscapes of Wales by J M W Turner (1775-1851)

Tour to Hafod (BV2202F)

A tour to Hafod, Cardiganshire in 1810 by Sir James Edward Smith (1759-1828)

Etchings of Tenby (BV232B)

A volume of etchings by Charles Norris (1779-1858), which was published in
1812

Drawing volumes (Nos 50-1, 53, 57, 85, 271, 299, 432)

Examples from the Library's collection of drawing volumes

John C Buckler, Ecclesiastical, monumental and castellated antiquities of
North Wales, 1810

George Delamotte, [Book of costume drawings], 1820

Penry Williams, [Book of drawings], 1822-1826

Augusta Hall, Cambrian costumes, 1830



Welsh Primitive, [A set of drawings of views in Cardiganshire], [ca. 1840]
Eliza Pughe, Pictorial dictionary, [ca. 1843]
Ellis Owen Ellis, Betti o Lansantffraid, [ca. 1844]
Ellis Owen Ellis, Life and times of Richard Robert Jones, Dic Aberdaron, 1844

Welsh landscape
The Library's collection of topographical prints

Framed works of art
The Library's collection of framed works of art

Illingworth cartoons
The Library's collection of the cartoons of Leslie Illingworth (1902-1979)

In progress

Thomas Pennant, A tour in Wales
The remaining seven volumes [see 'Journey to Snowdon' above] of the extra-illustrated version of this work by Thomas Pennant (1726-1798)

PRINTED MATERIAL

Completed:

[John Price], *Yny lhyvyr hwnn*, 1546 (W S 55)
The earliest book printed in Welsh

The 1588 Welsh Bible (W.d.1478)
The first Welsh translation of the complete Bible

Monstrous fish (W.s.1604(2))
The story, 1604, of the sighting of a mermaid near Pendine, Carmarthenshire

The case of Dr Thomas Bowles (XBX 5155 T78)
A pamphlet, 1773, about the case against the non-Welsh-speaking rector of Trefdraeth, Anglesey

Y Brython
A Welsh-language periodical published in Tremadog between 1858 and 1863

Welsh Biography Online
The dictionary of Welsh biography in encoded form

In progress

Robert Gruffydd, *Y drych Cristionogawl*, 1585
Another early printed work in Welsh

'The Blue Books'
Report of the Royal Commission on the state of education in Wales, 1847



SOUND AND VIDEO

SOUND

Completed:

'Hen wlad fy nhadau', 1899

Madge Breese and the first recording of the Welsh national anthem, 11 March 1899

Lloyd George and the Eisteddfod, 1916

Part of the speech by David Lloyd George at the National Eisteddfod in Aberystwyth

'Tynged yr iaith', Saunders Lewis, 1962

Part of the radio lecture broadcast by the BBC, 13 February 1962, copied from the LP (SAIN1255H) produced by Sain from a recording by Dr Dafydd Alun Jones

VIDEO

Completed:

Lloyd George visits Germany, 1936

David Lloyd George lays a wreath at the war memorial in München

Lloyd George visits Germany, 1936

David Lloyd George and his daughter, Megan, go shopping in Berchtesgaden

Lloyd George visits Germany, 1936

David Lloyd George meets Adolf Hitler

Recruitment rally, Machynlleth, 1939

Royal Welsh Fusiliers recruiting four months before the outbreak of war

Evacuees arriving at Machynlleth

Evacuees and their carers set off in a line from Machynlleth station

Funeral of David Lloyd George at Llanystumdwy, 1945 (MG/16/P/15)

Part of an amateur film by E C Roberts, Aberystwyth

Tryweryn, 1964-1965 (BM142)

Constructing the dam and drowning Cwm Celyn to meet the needs of Liverpool for water

Devolution Referendum, 1979 (SM0003695)

Neil Kinnock MP entering a polling station, and the referendum result

Miners' strike, 1984 (UM000972)

News item showing Mr Tommy Walker comparing the strike of 1984 with that of 1926



Welsh Language Act campaign, 1985 (SM000026)
News item about Cymdeithas yr Iaith Gymraeg occupying Barclays Bank,
Aberystwyth

Welsh Language Act campaign, 1992 (AM8675)
Cymdeithas yr Iaith Gymraeg rally, Aberystwyth, 15 February 1992

Plaid Cymru rally, 1992 (AM8675)
Dafydd Wigley MP calling for a parliament for Wales, 27 June 1992

Plaid Cymru rally, 1992 (AM8675)
Speech by Dafydd Iwan on Aberystwyth promenade, 27 June 1992

By category:

AGRICULTURE IN WALES

In progress:

Agriculture

An exhibition on farming history in 2004, the centenary year of the Royal Welsh
Show

ART AND ARTISTS OF WALES

Framed works of art

The Library's collection of framed works of art

Thomas Jones, Pencerrig

The life and work of Thomas Jones, Pencerrig (1742-1803)

Ingleby watercolours (PD9083-9253)

Views in north Wales and the Marches by John Ingleby (1749-1808)

Thomas Rowlandson (PD9357-9406 et al.)

Welsh landscapes and other subjects by Thomas Rowlandson (1756-1827)

Turner and Wales (CC/04; CC/01)

Two landscapes of Wales by J M W Turner (1775-1851)

Drawing volumes (Nos 50-1, 53, 57, 85, 271, 299, 432)

Examples from the Library's collection of drawing volumes:

John C Buckler, Ecclesiastical, monumental and castellated antiquities of
North Wales, 1810

George Delamotte, [Book of costume drawings], 1820

Penry Williams, [Book of drawings], 1822-1826

Augusta Hall, Cambrian costumes, 1830

Welsh Primitive, [A set of drawings of views in Cardiganshire], [ca. 1840]

Eliza Pughe, Pictorial dictionary, [ca. 1843]

Ellis Owen Ellis, Betti o Lansantffraid, [ca. 1844]

Ellis Owen Ellis, Life and times of Richard Robert Jones, Dic Aberdaron, 1844



Work and play
Everyday life through the eyes of the artist

BUILDINGS OF WALES

Architecture of Wales exhibition
Architectural drawings in The National Library of Wales

CARTOONS AND CARTOONISTS OF WALES

Illingworth cartoons
The Library's collection of the cartoons of Leslie Illingworth (1902-1979)

CELTIC LANGUAGES AND LITERATURE

Celtic Voices
The culture of the six Celtic nations as represented in the Library's collections

Voix Celtes
A French version of the Celtic Voices exhibition

In progress

Keltische Stimmen
A German version of the Celtic Voices exhibition

CORNISH LITERATURE

Beunans Meriasek (Peniarth MS 105B)
A metrical play in Middle Cornish telling the story of Saint Meriasek from Brittany

Beunans Ke (NLW MS 23849D)
An incomplete copy of a play in Middle Cornish which recounts the story of Saint Ke

CRIME AND PUNISHMENT IN WALES

Witchcraft (Court of Great Sessions Records)
Testimony given in cases of witchcraft in seventeenth-century Flintshire

Smuggler's autobiography (NLW MS 21834B)
Remarkable life of William Owen of Nevern, Pembrokeshire, executed in 1747 for murder

Cardiganshire criminals (NLW MS 23203B)
Register of criminals apprehended by Cardiganshire Constabulary between 1897 and 1933



EDUCATION IN WALES

In progress:

'The Blue Books'

Report of the Royal Commission on the state of education in Wales, 1847

EMIGRATION

In progress:

Migration exhibition

The story of migration from Wales to all parts of the globe

Letters from America and Australia (NLW MS 22846D)

Letters of a brother and sister, who emigrated from Llanfihangel-y-Pennant, Merionethshire, circa 1850

American Civil War (NLW MS 22421D)

Letters in Welsh, 1862-1864, relating a soldier's experiences during the American Civil War

ENGLISH LITERATURE

The 'Hengwrt Chaucer' (Peniarth MS 392D)

History of one of the most important surviving texts of the work of Geoffrey Chaucer (before 1346-1400)

A Middle English Miscellany (Brogyntyn MS ii.1)

One of the most important medieval English manuscripts at the Library

Dylan Thomas (NLW MSS, reference number to be confirmed)

Map of Llareggub drawn by Dylan Thomas (1914-1953) in composing *Under Milk Wood*

In progress

Piers Plowman (NLW MS 733B)

An important text of the work by William Langland (1330?-1400?)

FAMILY HISTORY SOURCES

St Asaph Notitiae (SA/MISC/1300-1491)

A survey of the population of the St Asaph diocese in the 1680s

In progress:

Probate

190,000 wills proved in the probate courts of Wales up to 1858



FOLK-LORE OF WALES

Monsterous fish (W.s.1604(2))

The story, 1604, of the sighting of a mermaid near Pendine, Carmarthenshire

LAND OF WALES

Ystrad Marchell (Wynnstay Estate Records)

Medieval charters of the Cistercian abbey of Ystrad Marchell (Strata Marcella), near Welshpool

LATIN LANGUAGE AND LITERATURE

Medieval Astronomy (NLW MS 735C)

The oldest scientific manuscript in the Library, which contains various Latin texts on astronomy

LAWS AND BY-LAWS OF WALES

Laws of Hywel Dda (Peniarth MS 28)

A Latin version of the native Welsh law with a series of illustrations in the text

LITERATURE OF WALES

Black Book of Carmarthen (Peniarth MS 1)

One of the earliest surviving manuscripts written solely in the Welsh language

Hendregadredd manuscript (NLW MS 6680B)

The earliest collection of the works of the Gogynfeirdd, the Welsh court poets

Book of Taliesin (Peniarth MS 2)

One of the most famous Welsh manuscripts containing some of the oldest poems in the Welsh language

White Book of Rhydderch (Peniarth MS 4)

The earliest compendium of prose texts in the Welsh language including the earliest version of the Mabinogion

Black Book of Basingwerk (NLW MS 7006D)

The history of the composite manuscript which was put together and, for the most part, written by the Welsh poet Gutun Owain (fl. 1460-1500) and traditionally associated with Basingwerk Abbey, Flintshire

[John Price], *Yny lhyvyr hwnn*, 1546 (W S 55)

The earliest book printed in Welsh

The 1588 Welsh Bible (W.d.1478)

The first Welsh translation of the complete Bible

Morgan Llwyd (NLW MS 11431B)

Unfinished dialogue in the hand of Morgan Llwyd (1619-1659), author and mystic



Goronwy Owen (NLW MS 11568B)

A poem by Goronwy Owen (1723-1769), one of Wales's most important 18th-century poets

Williams Pantycelyn (NLW MS 77A)

Religious poetry in the hand of William Williams (1717-1791), Wales's most eminent hymnwriter

History of the British Bards (NLW MS 13107B)

Notes by Iolo Morganwg (Edward Williams, 1747-1826) about bards and druids

In progress:

Dafydd ap Gwilym

More than twenty manuscripts which contain some of the work of this 14th century poetic genius

Black Book of Basingwerk (NLW MS 7006D)

The digital copy of the composite manuscript mentioned above

Robert Gruffydd, *Y drych Cristionogawl*, 1585

Another early printed work in Welsh

MAPS OF WALES AND THE WORLD

Thomas Taylor (Atlas 5210)

The Principality of Wales exactly described [...], 1718, the first published atlas relating entirely to Wales

Lewis Morris and William Morris (Map 6328; Atlas 5209)

Charts of the Welsh coastline, 1748, by Lewis Morris (1701-1765) and 1795, by his son, William

In progress

Printed maps of Wales up to 1837

The Library's collection of some fifty maps of the whole of Wales published up to 1837

MINES AND QUARRIES OF WALES

Senghennydd disaster (Photo Album 1863)

A series of postcards depicting the worst pit disaster in the history of the Welsh coal industry, 1913

Tower Colliery (Photo Album 2376-8)

A photographic document by Roger Tiley of the lives of the Tower miners over a period of one year



Miners' strike, 1984 (UM000972)

Video clip of news item showing Mr Tommy Walker comparing the strike of 1984 with that of 1926

PEOPLE OF WALES

Welsh Biography Online

The dictionary of Welsh biography in encoded form

Payments to a serving maid (NLW MS 11431B)

A manuscript shedding light on the subject of working women's dress circa 1600

History of the Gwydir family (NLW MS 23289B)

A copy, 1669, of 'History of the Gwydir family' by Syr John Wynn (1553-1627)

Thomas Pennant exhibition

The life and work of Thomas Pennant (1726-1798), naturalist and antiquarian

Ann Griffiths (NLW MS 694D)

A letter in the hand of Ann Griffiths (1776-1805), hymnwriter

In progress

Journals of Sir William Logan (NLW MSS 21715-16B)

Two journals, 1843-44, of Sir William Logan (1798-1875), geologist

PERIODICALS

Y Brython

A Welsh-language periodical published in Tremadog between 1858 and 1863

PHOTOGRAPHS AND PHOTOGRAPHERS OF WALES AND THE WORLD

Margam Castle Daguerreotype (Photo Album 1074)

The earliest Welsh photograph taken by the Reverend Calvert Richard Jones (1802-1877), Swansea

Mary Dillwyn Album (Photo Album 3900)

An album of early photographs, including the work of Mary Dillwyn (1816-1906) of Penlle'r-gaer

Carleton E Watkins (Photo Album 542)

An album by Carleton E Watkins (1829-1916), one of the finest American landscape photographers of the nineteenth century

John Thomas

The land and people of Wales through the lens of John Thomas (1838-1905), Liverpool



Geoff Charles

Phase 1 of the immense archive of the photojournalist Geoff Charles (1909-2002)

In progress

Geoff Charles

Phase 2 of the immense archive of the photojournalist Geoff Charles (1909-2002)

Early photography in Swansea

Five volumes of photographs taken by some of the pioneers of photography

PLACES OF WALES

Welsh landscape

The Library's collection of topographical prints (2 of the 13 historic counties completed so far) (0133)

Early tourists (NLW MSS 22753B and 1340C)

Two well-to-do visitors from England tell of their travels in Wales

Jinny Jenks, 'Tour through Wales', 1772

Thomas Martyn, 'A tour to south Wales', 1801

Journey to Snowdon (PD9872)

Volume 6 of this extra-illustrated version of 'A tour in Wales' by Thomas Pennant (1726-1798)

Tour to Hafod (BV2202F)

A tour to Hafod, Cardiganshire in 1810 by Sir James Edward Smith (1759-1828)

Etchings of Tenby (BV232B)

A volume of etchings by Charles Norris (1779-1858), which was published in 1812

In progress

Thomas Pennant, A tour in Wales

The remaining seven volumes [see 'Journey to Snowdon' above] of the extra-illustrated version of this work by Thomas Pennant (1726-1798)

Welsh landscape

The Library's collection of topographical prints (another 5 of the 13 historic counties)

POLITICS

Campaign!

Political and social campaigning 1900-2000



Lloyd George letters (William George Papers 10-3301)
Letters, 1886-1943 (but mainly 1886-1917), from David Lloyd George to his brother, William

Lloyd George diary (William George Papers 6)
The diary of David Lloyd George (1863-1945) for the year 1886

Lloyd George exhibition
Public and private aspects of the life of David Lloyd George (1863-1945)

Lloyd George visits Germany, 1936
Film clips of David Lloyd George laying a wreath at the war memorial in München; going shopping with his daughter, Megan, in Berchtesgaden; and meeting Adolf Hitler

Funeral of David Lloyd George at Llanystumdwy, 1945 (MG/16/P/15)
Part of an amateur film by E C Roberts, Aberystwyth

Tryweryn (BM142)
Video clip showing the construction of the dam and the drowning of Cwm Celyn, 1964-65, to meet the needs of Liverpool for water

Devolution Referendum, 1979 (SM0003695)
Video clips of Neil Kinnock MP entering a polling station, and the referendum result

Plaid Cymru rally, 1992 (AM8675)
Dafydd Wigley MP calling for a parliament for Wales and a speech by Dafydd Iwan on Aberystwyth promenade, 27 June 1992

RELIGION

The case of Dr Thomas Bowles (XBX 5155 T78)
A pamphlet, 1773, about the case against the non-Welsh-speaking rector of Trefdraeth, Anglesey

Vestry book (Lampeter parochial records 1)
The vestry book of the parish of Lampeter for the period 1777-1803

Collectanea Menevensia (SD/Ch/B27-28)
Two volumes, 1820, documenting the history of the diocese of St David's

In progress

Wales 1904 and the Revival exhibition
A glimpse of Wales at the time of the great religious revival of 1904-1905

TEMPERANCE

Aberystwyth Auxiliary Temperance Society (NLW MS 8323B)
Minute book and other records of this society which was formed in 1835



WAR

Recruitment rally, Machynlleth, 1939

Video clip of Royal Welch Fusiliers recruiting four months before the outbreak of war

Evacuees arriving at Machynlleth

Video clip of evacuees and their carers setting off in a line from Machynlleth station

WELSH LANGUAGE AND CULTURE

The National Anthem

Earliest manuscript, 1856, of *Hen wlad fy nhadau*; and a sound clip of its first recording, 1899

Lloyd George and the Eisteddfod, 1916

Sound clip of part of David Lloyd George's speech at the National Eisteddfod in Aberystwyth

'Tynged yr iaith', Saunders Lewis, 1962

Sound clip of part of the radio lecture broadcast by the BBC, 13 February 1962, copied from the LP (SAIN1255H) produced by Sain from a recording by Dr Dafydd Alun Jones

Welsh Language Act campaign, 1985 (SM000026)

Video clip of news item about Cymdeithas yr Iaith Gymraeg occupying Barclays Bank, Aberystwyth

Welsh Language Act campaign, 1992 (AM8675)

Video clip of the Cymdeithas yr Iaith Gymraeg rally, Aberystwyth, 15 February 1992

Philological Society

International Dunhuang Project (<http://idp.bl.uk/>)

Titus (<http://titus.uni-frankfurt.de/indexe.htm>)

Digital Turfan archive

(<http://www.bbaw.de/forschung/turfanforschung/dta/index.html>)

Sage

retro-digitised a lot of material from our collection, 80,000 full text articles have been digitised, in a lot of cases these go back, for instance Psychology goes back 36 years

Taylor and Francis

Market test with backlogs of four journals (Radiation Biology... Open Air Studies] which is a planning journal, and Education Digest... Disability in Society)

Appendix H

URLs provided by respondents

Digitisation strategies

<http://www.lib.ed.ac.uk/about/policy/digitintro.pdf>

<http://www.lib.strath.ac.uk/colldev.htm> (under construction)

“Showcases”

<http://longford.nottingham.ac.uk/spotlight/>

<http://www.ucl.ac.uk/ls/specdig>

Resource Collections/Gateways

<http://dspace.lib.cranfield.ac.uk>

<http://images.lib.ed.ac.uk> (under construction!)

http://www.abdn.ac.uk/diss/historic/Digital%20_resources.shtml

<http://www.mundus.ac.uk>

<http://www.qub.ac.uk/lib/SpecialCollections>

<http://www.scran.ac.uk/>

<http://www.uce.ac.uk/uceel/>

Special Collections

<http://special.lib.gla.ac.uk/>



Resources

<http://ads.ahds.ac.uk/catalogue/>

<http://booth.lse.ac.uk/>

<http://dart.open.ac.uk/>

<http://hri.shef.ac.uk/fairground/index.html>

<http://library.open.ac.uk/waltonhall/collections/archive.html>

<http://sine.ncl.ac.uk/>

<http://www.anngriffiths.cf.ac.uk/index.html>

<http://www.bodley.ox.ac.uk/ilej/>

<http://www.bopcris.ac.uk>

<http://www.brunelarchive.org/>

<http://www.citizenshippast.org.uk>

<http://www.dur.ac.uk/picturesinprint/>

<http://www.egil.nottingham.ac.uk/texts/index.html>

<http://www.eppi.ac.uk>

<http://www.farneweblog.com/>

<http://www.gerty.ncl.ac.uk/home/>

<http://www.historicaldirectories.org/organisation>

<http://www.isos.dias.ie/>

<http://www.sas.ac.uk/warburg/mnemosyne/DigitalCollections.htm>

<http://www.swahilimanuscripts.soas.ac.uk>

<http://www.tomorrows-history.com/>

<http://www.unionhistory.information>

<http://www.usc.edu/isd/archives/arc/digarchives/mission/>

Other

Not yet available. When launched, there will be a link to it from <http://www.library.manchester.ac.uk>

Project web site will be available by end of February via ADS (library of the Society of the Antiquaries of London)

Digitised Content in the UK Research Library and Archives Sector – A report to the Consortium of Research Libraries and the Joint Information Systems Committee

This document is available in alternative formats

For more information: www.jisc.ac.uk/digitisation

JISC

Further information about JISC:

Web: www.jisc.ac.uk

Email: info@jisc.ac.uk

Tel: 0117 954 5083



Further information about CURL:

Web: www.curl.ac.uk

Email: info@curl.ac.uk

Tel: 0121 415 8106