Digitisation of Knowledge Resources : The Management Issues

H.K. KAUL

Director, DELNET

1. Introduction

The global information infrastructure is transforming with the growth in full text digital resources and fast communication facilities. This is so because Institutions, Agencies and Departments in every country are busy capturing, processing, storing and disseminating information in the digital form. It is very well understood that fast access to desired information can lead to rapid development of a country, an institution or an individual. While there are controls on this growing information resource, it has global implications and applications and therefore digitisation is not a local affair as long as we understand that we can contribute to global information resource and also access its resource for any purpose.

From giving bibliographic and catalogue services in digital form to the users, the libraries are slowly creating full text digital data with multimedia applications. These applications have already begun to revolutionise methods of research and access to education material. It will further transform life and cultural patterns the world over. The knowledge resources including books, journals manuscripts, etc. available in the libraries, archives, museums and private collections are getting identified through Library and Information networks and access to them has already made success stories around the world. It is now the turn of full text multimedia-based digital resources that are becoming essential these days.

Reference may be made to a number of successful experiments that have been made in the digitisation of full text works of various types all over the world such as University of Waikato Digitisation Project, New Zealand, Vatican Library, NEC Computer Science Digital Library Site, Telematics for Libraries, Controlled Access to Network Digital Libraries in Europe (Candle), Delivery of Copyright Materials in Electronic Form (DecomateII), Digitised European Periodicals (Dieper), Biblioteca Universalis, Global Info, the German Digital Libraries Project, Information Tacis Project, in Russia, Denmark's Electroniske Forsknings - bibliotek (DEF), FinELib in Finland, Project Runeberg in Sweden, Memoria Hispancia, Medieval Illuminated Manuscripts project in the Netherlands, The British Library's Digital Library Program, Electronic Libraries (eLib) Programme in UK, The Nobel Library Digitisation Programme, Complutense University; Complutense University of Madrid (UCM), Social Law Library: Boston, Stanford University: Standord Artesia Technologies, Inc.'s TEAMS digital asset management solution, etc. However, a detailed list of important links to digitisedresources and documents on digitisation is given at the end.

2. Knowledge Resources

2.1 Promoting Infrastructure and Competencies

India holds in its libraries, archives, museums, private collections, and book stores and information centres millions of books, journals, manuscripts, reports, grey literature, CD-ROMs, video-recordings, sound-recordings, including objects of art and historical and archaeological evidence. The contributions made by Indian Scholars for more than the first few millennia lie scattered in such repositories

of documents. Several management issues come to mind in this regard. They are given as follows:

2.1.1. Cooperation at the National Level

It is important to promote interest in the digitization of documents among commercial agencies through competitiveness, cooperation methods and the relevance of partnerships for a reasonably profitable business. In order to achieve this result well, it is necessary to create a system for resolving copyright issues.

2.1.2 Scope of Content

The scope of content at the national level needs to be drawn to the attention of the commercial sector so that they take immediate interest in the job. For instance, the digitisation work in the public sector including government organization is much too large and this needs to be undertaken quickly. To achieve this objective, experiments will have to be conducted at the national level to promote cooperation and avoid duplication in this work. The Central Government and State Governments could fund foundations to undertake this massive job and develop infrastructure for cooperation with the agencies like publishers that create content in the print form. This whole process demands the creation of a new financing policy so that there are incentives for developing this national resource.

It is noticed the world over in these projects that the management of copyright permissions and facilitation of copyright payments make the digitisation of copyrighted works fast. This necessitates that cooperation with Copyright Clearance Agencies is esstential.

2.1.3 Training

Training at state and national levels will have to be arranged to implement the processes of content creation and achieve a higher degree of competency in content creation. In this process DELNET can contribute a great deal of resources in collaboration with the member-libraries for the national content.

2.1.4 Types of Projects to be undertaken

Content creation work in digital form needs to be done by each Institution, Ministry or Department in the country. For instance, courseware needs to be made available by institutions such as the University Grants Commission and made available through the Internet to students. Since integrated access to knowledge is needed on any subject there is a need to coordinate content creation processes. This will result in a variety of digital learning resources for the users.

In the field of education special attention will have to be given to upgrading the skills of teachers in accessing digital resources, use of digital television, and to the general public in using knowledge in the digital form. This means training at a much larger scale will have to be introduced by private and government agencies, associations and NGO's.

2.1.5 Standards

Efforts will have to be made to introduce standards for Meta information and data security which is at par with global standards.

2.1.6 Communication Facilities

Broadband connectivity at all levels in the country needs to be established to enable large data for images and video-conferencing to move fast. This will lead to distribution of varied content and the promotion of electronic transactions and commerce.

This general telecommunication framework and the compulsions for using electronic commerce and full text digital resources will have international implications. Education and research activities will receive a boost and the public will begin to appreciate the importance of digitisaton at the national and international levels.

3. Management of Digitisation Processes

Management of digitisation processes would include all kinds of documents. Due to lack of space, I am referring here only to the management issues concerning printed documents. Reference support for other types of knowledge resources are given at the end.

3.1 The Committees

The committees of experts for technical purposes as well as for the selection of documents should be constituted to undertake the selection process.

3.2 Selection of Materials for Scanning

3.2.1 The Principles

The purpose of selecting documents for scanning should be based on the following principles : (1)

a. *Digital Document on the Web is a Published Document*

A document that is digitised and made available to the users in the world is open for use and comment by any scholar, professional and the general public. It is important to see that whatever has been digitised is a unique publication and it carries with it all the characteristics of a published document.

b. *Own Copyright of the Document before Digitising it.*

In order to execute the right of a publisher without violating copyright regulations, it is important for every institution digitising a document to own copyright of each document to be digitised.

c. *Arrange Financial Resources to Support Preservation of Digital Databases*

Digital databases need to be accommodated in new formats and hardware using compatible software from time to time. The financial support will have to be arranged to support the change over so that the users do not start with having no access to the document. It is therefore important that the project should have the means of revenue generation or the facility of getting a regular grant for the maintenance of the digital data.

d. *To Reduce Costs on Scanning Select the Best*

The initial costs on scanning may not be much but coupled with quality control checks, preparation of indexes, catalogues and metadata the entire job becomes expensive. It is therefore advisable to select the best documents at the initial stage.

e. *For Each Document Create a Well-Researched Documentation*

Before scanning is started each document, part by part, should be processed for appropriate captions and completeness of the document. Accompanying material needs to be written to give the necessary context to the document being digitised.

f. *Don't Publish Sensitive Documents on the Web without Consulting the Concerned Officials or Organisations*

Each institution has to keep in mind that any sensitive document for a group, society or country should not be digitised unless it is in the interest of country that such information should reach a wider audience.

g. *Undertake a Final Overall Quality Check*

The committee for selecting documents for scanning should undertake final quality check in terms of the authenticity and accuracy of information both for textual or visual materials and the overall presentation of the digital data on the Web.

It has to be kept in mind that the documents to be digitised conform to broader objective of the institution. Therefore the document should be in perfect condition. If it is not, another copy of the document should be arranged for digitisation purposes. Such documents which are tiny / oversize, or whose physical condition is bad, or the documents are available on a format like glass or birch bark special techniques need to be used.

3.2.2 Basic Selection Methods

For selecting documents for digitisation the following three steps need to be taken into account :(2)

A. *Nomination* : A meeting of experts, authors, library and information scientists, archivists, etc.

should be held to collect names of documents that need to be selected for digitisation purposes. While doing so the following guidelines need to be seriously considered: (3)

a.   "How much of the collection is well and accurately documented at the item level in reliable and complete indices and finding aids, and where are these well-documented items?

b.   How much of the collection is in stable or good condition, and where are these stable materials ?

c.   What portion of the collection is standard and consistently sized, normal contrast, black-and-white and / or printed materials, and where do these materials fall? Note : Avoid oversized, unusual and varying format, long-tonal range, colour and handwritten materials for start-up projects;

d.   What materials are easy to provide to researchers because of their size, format, or viewing requirements and where are they in the collection?

e.   What percentage of the materials does the institution have the copyrights to or licenses for, and where are the public domain materials?

f.   What percentage of the materials has no restrctions or sensitivities of any (such as privacy, publicity, defamation, obscenity and sensitivity, or donor restrictions), and where is this restricted and non-sensitive material?

g.   What materials are of highest monetary value and well secured, and where are they in the collections?

h.   What materials are judged to be at highest risk and why, and where are they located in the collections ? Of these, which are stable enough to be scanned without damage or which have already been well photographed?

i.   What materials are used most frequently, how are they used, and where are they located?

j.   What materials are unique to the institution, and where are they located?"

In order to collect a variety of view points as given above, the Handbook for Digital Projects (4) advises to use two nomination forms, one for selection and the other for deselection. This exercise is considered to be very important.

3.2.3 Evaluation

The Selection Committee or the Sub-Committee in a particular discipline should examine the suggestions made and decide on which items to be included and deleted.

The Selection Committee should evaluate the recommendations made and deselect, if found necessary, according to international practices set for this purpose (5). The following principles which are based on the recommendations given in the Handbook for Digital Projects need to be kept in mind.

a.   Mission Statement : Is the document to be digitised falling within the purview of the Project ? If not, don't digitise.

b.   Scope of Collections Statement : If a complete collection is digitised, confirm that the document to be digitised falls within the repository scope of the collection.

c.   Deselection Requests from the Supporters of the Project : If the supporter of the Project recommends that the document should be digitised and they are challenged by equally important sources not to digitise, the document should not be digitised. However, if the Selection Committee finds deselection recommendations frivolous or insubstantial, then ignore them.

d.   Donor Restrictions : If the donor of the document to be digitised puts substantial or non-negotiable restrictions which prevent the users to use the document according to the policy defined by the institution digitising the document then don't digitise the document. If the document is important and not available elsewhere try to re-negotiate the terms with the donor.

e.   Copyrights : Don't digitise any document unless you are sure that it is in the public domain or

you have obtained copyrights or licenses / permissions.

f. *Privacy Rights* : If a document contains images / pictures of living persons obtain permissions from them before digitising the text.

g. *Publicity Rights* : If the document includes images or recordings of famous persons such as motion picture or recording stars, scientists, artists or authors obtain permissions from the persons or their estates before digitising the text.

h. *IT Regulations* : Don't digitise the document which is not permitted under the law or the Information Technology Act.

i. *Sensitivity* : If the document contains sensitive information on subjects such as defence, religion, etc. or is unbalanced in its point of view, the Selection Committee should get the advise of experts before taking a decision on digitisation.

j. *Evidential Value* : If the document contains material that is evidential in nature or supports events with legal and historical proofs and / or interests a key audience as it has substantial information, then the document should be digitised.

k. *Authenticity* : If the document is authentic and original in contribution it should be digitised.

l. *Visual Accuracy* : If the print / appearance of the document supports the creation of an accurate and sharp digital version then digitise it. If not, find alternate methods for doing so.

m. *Documentation* : If the document does not have appropriate captions and the budget does not permit to appoint staff to create them, then defer the digitisation of that particular document.

n. *Contextualisation* : If a document essentially needs substantial and expensive research inputs in terms of contextual support such as hypertext support for certain portions or viewing of document in relation with other documents simultaneously etc. it may be necessary to reconstruct the archaeological support in the Encoded Archival Description (EAD) format or author suitable format. If it is not possible to do so, it would not be advisable to digitise such a document.

o. *Added Value* : If the document has become available for the first time, it fulfils the necessary, conditions laid out for the selection of a document, it is considered necessary to make it available to a larger audience, then if funds permit, digitise the document in order to :

i. Make the unique document available to a larger auidence;

ii. Create linkages to the document through HTML, SGML, XML, coding;

iii. Make it part of the virtual collections on the same subject using different techniques, format and bringing together physically separated documents either on the Web or in CD form.

iv. Add new indexes and searching aids.

p. *Audience* : If the digital version and the printed version reaches the same audience, yet considering that the document is important to the Indian heritage or is an Indian contribution, the digitisation of the document should be considered.

q. Supplementary Selection Criteria : If the audience creates its own selection criteria, such recommendations should be taken into the evaluation process ;

r. *Technology* : If the audience cannot afford the expensive equipment for using the digital version, then avoid digitisation. However, now that Internet is becoming available to more and more users in India, this factor does not apply. However, the technology should be such that every Internet user can access the document easily.

s. *Condition* : If the condition of the document to be digitised is very poor and it is likely that in the digitisation process the document will get damaged, then do not digitise it.

t. *Control* : Make sure that rare materials are kept under security during the process of digitisation and are returned to the owner in the original condition.

u. *Duplication of Effort* : If the document has been digitised elsewhere, locate the source, and find the quality of the digital version. If we can get a copy for general use, then it is not worth digitising the document.

v. *Accessibility* : If the original document is inaccesible but it is available in microfilm or microfiche form widely, it may not be ideal to digitise the document at this stage.

w. *Cumulation* : If the document is relevant as part of a collection only, then the digitisation of it alone must be seriously questioned by the Selection Committee and other reasons obtained for its selection before taking a decision for digitisation of the document.

3.2.4 Prioritisation

The final list prepared for digitisation purposes should be ranked in the order of priority keeping in mind the relevance of each document in a historical perspective, its use in the present context and its physical condition. The international norms for prioritisation should be considered.

4   Digitisation: Some Important Management Factors

There are some important factors that help in the management of the documents. These need to be assessed while adopting digitisation techniques.

(a) *Storage and Distribution of Data*: The use of necessary storage and distribution systems to provide global access to resources is essential.

(a) *Long-term preservation methods*: Some sort of assurance that the scanned images will be visible for a long time to come.

(b) Standardisation of digtisation processes. Standardisation for wholesale conversion of paper documents in digital format is imperative.

These criteria are influenced by the evolution of new information objects and contents, the use of metadata and terms and condition of intellectual property rights. The managers of digitisation jobs have

to keep in mind these issues from a global point of view.

5   Management Aspects of Digital Library Architecture

The management issues need to be examined carefully in view of the fact that low connectivities, poor indexing facilities, lack of Web servers and poor quality document management software can have a major impact on digitisation processes. It is therefore essential to have:

* high speed local server and fast connection to the Internet
* relational databases that support a variety of digital formats
* full-text search engines with efficient indexing facilities
* Web servers and FTP servers
* electronic document management facility
   These facilities should accommodate different types of documents including,
* Internet resources
* Primary materials in various digital formats.
* Photographs
* Numerical data sets, and
* Electronic journals.

6   Preservation

Management of the digitised documents for preservation is an important issue. In this regard the relevance of technical obsolescence has to be taken into consideration. It necessitates the adoption of new technical solutions periodically.

The following three types of "preservation" issues can be considered seriously:
* The preservation of the storage medium,
* The preservation of access to content,
* The presentation of fixed media
materials through digital technology.

6.1   The Preservation of the Storage Medium

The libraries will have to keep moving information in the digital formats such as tapes, hand drives and

floppy discs from one storage medium to another storage medium.

6.2 The Preservation of Access to Context

It is a major issue, it is essential to translate data from one format to another while making users to retrieve and display the necessary information. Since migration of data is costly, one has to ensure that in the process there is no distortion or loss of information. The US Commission on Preservation and Access and RLG states "the presentation community is only beginning to address migration of complex digital objects" and such migration remains "largely experimental".

6.3 The Presentation of Fixed-Media Materials

Since there are no common standards libraries need to make CD-ROM and optical disk back-ups regularly. Several types of back-ups will ensure that there is no loss of contents. This is essential.

7 Important Reference Sources [6]

7.1 Libraries

- **Alexandria**: A digital library for geographically-referenced materials [7]

- American Library of Congress <http://www.loc.gov/> [8]

- American Memory from the Library of Congress <http://rs6.loc.gov/amhome.html> [9]

- Berkeley Digital Library Sunsite [10]

- Bibliothèque nationale de France [11]

- Digitisation of Library Materials: Report of the Concentration Meeting & Workshop Luxembourg, 14.12.99 [12]

- Bowes Museum [13]

- British Library <http://www.bl.uk/> [14]

- Columbia University Libraries - Oversized Color Images Project: Addressing Issues of Preservation and Access [15]

- Cornell University Library Dept. of

Preservationand Conservation <http://www.library. cornell.edu/preservation/> [16]

- Council on Library and Information Resources <http://www.clir.org/> [17]

- Foxe's Book of Martyrs - British Academy John Foxe Project <http://www.shef.ac.uk/uni/projects/bajfp/index.html> [18]

- GUL Special Collections Home Page <http://special.lib.gla.ac.uk/index.html> [19]

- Internet Library of Early Journals [20] - An eLib (Electronic Libraries Programme) Project by the Universities of Birmingham, Leeds, Manchester and Oxford

- **JSTOR** [21]

- LION - Chadwyck-Healey Literature Online [22]

- Muse - Project Muse <http://muse.jhu.edu/muse.html>, John Hopkins University Press and the Milton S. Eisenhower Library - *initiative enabling worldwide networked access to the full text of over 40 of the Press's scholarly journals. Supported by the National Endowment for the Humanities and the Andrew W. Mellon Foundation*[23]

- Museum of Contemporary Art, San Diego [24]

- National Libraries Treasures of Europe [25]

- New York Public Library - Digital Library [26]

- **RLG** Research Libraries Group [27]

- Vatican Library materials - article "Toward on-line, worldwide access to Vatican Library materials" <http://www.almaden.ibm.com/journal/rd/mintz/mintzer.html> [28]

- Victoria State Library Multimedia Catalogue - paintings, sketches, photographs, postcards <http://slv950.slv.vic.gov.au/webpac-bin/wgbroker?07250011123361+-access +top. image> [29]

- Yale University Library Project "Open Book" [30]

- University of Virginia Special Collections [31]

7.2 Digitisation of Arts and Heritage Assets (projects, institutions, etc)

- Art Museums Network USA <http://www.amn.org/AMICO/> [32]

- American Memory from the Library of Congress <http://rs6.loc.gov/amhome.html> [33]

- Arts and Humanities Data Service (AHDS) [34]

- Beazley Archive, Oxford University [35]

- Berkely Digital Library SunSITE <http://sunsite.berkeley.edu/> [36]

- Berkeley Digital Lib - Imaging Information [37] <http://sunsite.berkeley.edu/Imaging/>

- British Museum Database [38]

- California Heritage Digital Image Access Project <http://sunsite.berkeley.edu/CalHeritage/> [39]

- Canadian Heritage Information Network <http://www.chin.gc.ca/> [40]

- Croydon Museums Riesco Collection [41]

- English Episcopal Acta Database [42]

- EU DLM Guidelines on best practices for using electronic information <http://www2.echo.lu/dlm/en/gdlines. html>[43]

- Fine Arts Museum San Francisco -Imagebase QBIC <http://www.thinker. org/imagebase/index-2.html> [44]

- Foxe's Book of Martyrs - British Academy John Foxe Project <http://www.shef.ac.uk/uni/projects/bajfp/index.html>[45]

- French Ministry of Culture (French Museums Biblio Database <http://www.culture.gouv.fr/culture/bdd/index.html>) [46]

- Getty Information Institute, California <http://www.ahip.getty.edu/> [47]

- Guggenheim [48]

- Howard Besser's Image/Multimedia Database Resources [49]

- **Imperial War Museum** - Visual Arts Data Service in collaboration with the Imperial War Museum Art Department project to mount their Art Collection on-line.Demonstrator available for public access [50]

- **Images of England** [51]

- J. Paul Getty Museum. California <http://www.getty.edu/museum/> [52]

- The National Gallery, London <http://www.nationalgallery.org.uk/> [53]

- Music Performance Research Centre [54] (A unique music archive at the Barbican Centre, within the Barbican Library. Legendary artists can be heard or seen in recordings of live performances given from the 1930s to the present day)

- Perseus Project [55]

- Royal Commission for the Historical Monuments of England [56]

- Royal Commission for the Historical Monuments of Scotland [57]

- SCRAN [58] The award winning history and culture website. <http://SCRAN [58]Home Page>

- Stanford Conservation Online [59]

- Research Library Group DigiNews <http://www.rlg.org/preserv/diginews> [60]

- The Tate Gallery <http://www.tate.org.uk> [61](basic information about the collections

- Thesaurus Musicarum Latinarum - Center for the History of Music Theory and Literature, School of Music, Indiana University [62] (database that will eventually contain the entire corpus of Latin music theory written during the Middle Ages and the Renaissance)

7.3 Articles, Readings, and other things

- A Few Scanning Tips <http://scantips.com/>: a very useful site with some good information for all levels. [63]

- Besser, Howard - Trant, Jennifer "Introduction to Imaging" <http://www.ahip.getty.edu/intro_imaging/0-Cover.html> [64]

- Chapman, S. et. al., 1997. 'Selection for Digitizing: A Decision Making Matrix' <http://preserve.harvard.edu/resources/digitization/matrix.html>, May 1997. [65]

- Columbia University Libraries - Oversized Color Images Project: Addressing Issues of Preservation and Access <http://www.columbia.edu/dlc/nysmb/>[66]

- Columbia University Libraries, 1997.`Selection Criteria for Digital Imaging Projects,' <http://www.columbia.edu/cu/libraries/digital/criteria> [67]

- Copyright Law in the Digital World - R. Baron <http://www.pipeline.com/~rabaron/ttm/TTM.htm> [68]

- Day, M. 1997. `Metadata for Preservation', CEDARS Access Issues Working Group <http://www.ukoln.ac.uk/metadata/cedars/AIW01.html> [69]

- Digital Watermarking Bibliography <http://liinwww.ira.uka.de/bibliography/Graphics/watermarking.html> [70]

- Digital Watermarking: Safeguarding Digital Library Contents and Users <http://www.dlib.org/dlib/december97/ibm/12lotspiech.html> [71]

- Digitisation of Library Materials: Report of the Concentration Meeting & Workshop <http://www.echo.lu/digicult/en/digit.pdf>, Luxembourg, 14.12.99 [72]

- EU DLM Guidelines on best practices for using electronic information <http://www2.echo.lu/dlm/en/gdlines.html> [73]

- ILEJ - papers on the project <http://www.bodley.ox.ac.uk/ilej/>[74]

- Image Permanence Institute - Recommendations for the Evaluation of Digital Images <http://lcweb2.loc.gov/ammem/ipirpt.html> [75]

- Kenney, A. R. 1998. `Digital to Microfilm Conversion: A Demonstration Project 1994-1996<http://www.library.cornell.edu/preservation/com/comfin.html> [76]

- Kenney, A.R and Rieger, O.Y., 1998. `Using Kodak Photo CD Technology for Preservation and Access: A Guide for Librarians, Archivists, and Curators' <http://www.library.cornell.edu/preservation/kodak/kodak-htm.htm> [77]

- Kiernan, K. `Digital Preservation, Restoration, and Dissemination of Medieval Manuscripts' <http://www.uky.edu/~kiernan/eBeowulf/guide.htm>[78]

- Lee, S. 1999. *Scoping the Future of the University of Oxford's Digital Library Collections*. Final Report of study funded by the Andrew W. Mellon Foundation. Oxford, University of Oxford's Humanities Computing Unit, September 1999 [79]

- Library of Congress Manuscript Digitisation Demonstration Project, Final Report by Sharpe, Louis, H., Ott, Michael D., Fleischhauer, C. 1998. [80] <http://memory.loc.gov/ammen/pictel/pictel.pdf>

- OCLC/NCSA Metadata Workshop Report (Dublin Core) <http://www.oclc.org:5046/oclc/research/conferences/metadata/dublin_core_report.html> [81]

- Oppenheim, C. 1997, `Copyright in the electronic age'. UNESCO World Information Report. Unesco, Paris <http://www.unesco.org/webworld/com_inf_reports/wirenglish/chap26.pdf> [82]

- Parry, D. 1998. Virtually New - Creating the Digital Collection: a review of digitisation projects in local authority libraries and archives.[83] <http://www.ukoln.ac.uk/services/lic/digitisation/>

- Puglia, S. 1999. `Creating Permanent and Durable Information: Physical Media and Storage Standards' <http://tps.cr.nps.gov/crm/archive/22-2/22-02-10.pdf>[84]

- Research Library Group Working Group on Preservation Issues of Metadata <http://www.rlg.org/preserv/presmeta.html>[85]

- Reilly, J.M., & Frey, F.S. 1996. Recommendations for the Evaluation of Digital Images Produced from Photographic, Microphotographic, and Various Paper Formats <http://lcweb2.loc.gov/ammem/ipirpt.html> [86]

- Schantz, H. F. 1996. `Optical Character Recognition — The Mature Technology with the Brilliant Future', [87] <http://www.aiim.org/infoservices/index.html>

- Sharpe, Louis, H., Ott, Michael D., Fleischhauer, C. 1998. Library of Congress Manuscript Digitisation Demonstration Project,[88] <http://memory.loc.gov/ammen/pictel/pictel.pdf>

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- Structured Glossary of Technical Terms - Commission for Preservation & Access <http://www.clir.org/pubs/reports/lynn/index.html> [90]

- Tanner, S., and Robinson, B. 1998. JISC Image Digitisation Initiative (JIDI): Feasibility Study (Final Report) [91] <http://heds.herts.ac.uk/Guidance/JIDI_fs.pdf>

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- Townsend, S., Chappell, C. & Struijvé, O. 1999. Digitising History: A Guide to Creating Digital Resources from Historical Documents. AHDS Guides to Good Practice. <http://hds.essex.ac.uk/g2gp/digitising_history/index.html> [93]

- "Toward on-line, worldwide access to Vatican Library materials" <http://www.almaden.ibm.com/journal/rd/mintz/mintzer.html> [94]

- VADS Metadata Workshop Report <http://vads.ahds.ac.uk/Metadata1.html> [95]

- Z39.50 Made Simple <http://www.dstc.edu.au/DDU/projects/Z3950/zsimple.htm> [96]

- Optical Music Recognition <http://www.ips.id.ethz.ch/~roth/omr.html> [97]

7.4 Journals

- Cultural & Heritage Informatics Quarterly <http://kapis.www.wkap.nl/kaphtml.htm/IFA1042-1467> [98]

- *DigiNews by RLG* [99]

- *D-Lib Magazine <http://www.dlib.org/dlib/>* [100]

References

1. Sitts, Maxima K. *Handbook for digital projects.* Andover, Mass. Northeast Document Conservation Center, 2000.

2. Ibid.

3. Ibid.

4. *Handbook for Digital Projects.*

5. Ibid.

6. <http://www.ils.unc.edu/DCHP/links.html>

7. <http://alexandria.sdc.ucsb.edu>

8. <http://www.loc.gov/>

9. <http://rs6.loc.gov/amhome.html>

10. <http://sunsite.berkeley.edu/Imaging>

11. <http://www.bnf.fr/>

12. <http://www.echo.lu/digicult/en/digit.pdf>

13. <http://www.bowesmuseum.org.uk>

14. www.bl.uk <http://www.bl.uk>

15. <http://www.columbia.edu/dlc/nysmb/

16. <http://www.library.cornell.edu/preservation/>

17. <http://www.clir.org/>

18. <http://www.shef.ac.uk/uni/projects/bajfp/index.html>

19. <http://special.lib.gla.ac.uk/index.html>

20. <http://www.bodley.ox.ac.uk/ilej/>

21. <http://www.jstor.org/>

22. <http://www.lib.gla.ac.uk/Resources/Databases/index.html> (then click on LION) or direct at <http://lion.chadwyck.co.uk/>

23. <http://muse.jhu.edu/muse.html>

24. <http://www.mcasandiego.org/>

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