



THE NATIONAL LIBRARY OF WALES



DIGITAL PRESERVATION POLICY AND STRATEGY

March 2003

PREFACE

This Digital Preservation Policy and Strategy has been prepared by a committee under the chairmanship of Gwyn Jenkins, Director of Collection Services. Mared Owen, Sally McInnes and Avril Jones were primarily responsible for the research and drafting the document. The other members of the committee were Non Jenkins, Kathy Hughes, Robert Davies, Iwan Jones, Iestyn Hughes and John Watts-Williams.

Gwyn Jenkins
4:3:2003

CONTENTS

1	INTRODUCTION
2	CONTEXT: EXTERNAL
3	CONTEXT: INTERNAL
4	POLICY
5	COOPERATION AND COLLABORATION
6	CO-ORDINATION, REPORTING AND MONITORING
7	POLICY REVIEW
8	STRATEGY PLAN 2001-2003
8.1	Current resources
8.1.1	Staffing
8.1.2	Equipment
8.2	Funding
8.2.1	Capital
8.2.2	Proposed resources
8.2.3	Other sources of funding
8.3	Implementation
8.3.1	Collection Development
8.3.2	Legacy formats
8.3.3	Digital archive
8.3.4	Preservation Strategies
8.3.5	Material covered by voluntary agreement and statutory acts
8.3.6	Content Management System / Data Asset Management System
8.3.7	Web-archiving
8.3.8	Electronic records
8.3.9	Sound and moving image material
8.3.10	Standards
8.3.11	Training and workflow
8.3.12	Collaboration and Partnership
8.3.13	Review

1 INTRODUCTION

- 1.1 As part of its strategy to improve access to its collections, the National Library has made great strides in recent years in developing and increasing the digital content, mainly available free, on its website. As this complements the National Assembly's wider strategies to develop a 'learning country', funding has been allocated to support this development. The National Assembly also emphasises the necessity of building a sustainable future and, in this context, there is a need to ensure that digital materials produced or acquired by the Library are preserved for future use.

The purpose of this document is to establish a policy and strategy which will facilitate the sustainability of the Library's present and future digital holdings. A failure to plan, fund and implement this strategy for digital preservation would be the equivalent of building a digital house on sand. The loss of other materials in the past (e.g. film, video and magnetic tape because of technological changes and a failure to act quickly enough [see 2.7]) is a warning from history.

The digital future is dependent on acting now, as it will not be possible to recover tomorrow what is lost today.

2 CONTEXT: EXTERNAL

- 2.1 The National Library is an Assembly Sponsored Public Body which is largely funded by the Assembly. It is obliged to take into account the National Assembly's agenda as well as that of the requirements of the Library's Charter.¹

The National Assembly has produced a number of policy documents which are relevant to the Library's activities (e.g. *Plan for Wales 2001* and *Creative Future: A Culture Strategy for Wales, 2002*)². There is an emphasis in these documents on the need to develop a 'learning country', on increasing access to the nation's rich cultural heritage and on promoting ICT to help create a more prosperous, culturally rich and less divided society. Underpinning the Assembly's policies is the need to build a sustainable future.

One of the ways that the National Library has contributed to the Assembly's agenda is the increase in the amount of digital material mounted on its website. The Library's digitisation strategy emphasises that the materials to be digitised are selected to respond to the needs of the audience and such materials have proved particularly useful as learning sources³. However the increasing amount of materials being digitised, as well as the increasing amount of born-digital material acquired, from outside the Library, has led to problems of sustainability. The Library needs to ensure that digitised materials are preserved to appropriate standards for future use, otherwise considerable effort and finance is wasted.

¹ <http://www.llgc.org.uk/adrodd/AppendixA.pdf>

² <http://www.planforwales.wales.gov.uk/> and http://www.wales.gov.uk/subculture/content/creative/creative_home-e.htm

³ http://www.llgc.org.uk/drych/digido_s01.htm

The need for sustainability for digital materials is an issue which is of importance to cultural/information institutions internationally. The Library has been involved with or has been aware of developments in this field. This strategy is based on current thinking in this complex and rapidly-changing field but it has also taken into account not only the specific requirements of the Library itself but also those of Wales in general.

2.2 Recent developments in digital preservation

Digital preservation⁴ is broadly defined as preserving access to digital material over time, or more specifically as 'the managed activities necessary to ensure continued access to digital materials for as long as necessary'⁵. This field is a rapidly developing one that reflects the continual technological changes and advances that require action to be taken so that digital material will be accessible in the future. International 'standards' and best practices (see 2.6.3) are emerging as the same problems appear and are being addressed around the world, and all types of communities, including libraries, archives and other cultural communities, are learning from one another's experiences. This activity is reflected in the research work currently being conducted by various projects such as Cedars⁶, InterPARES project⁷, CAMiLEON⁸. Due to the inevitable costs involved in digital preservation, co-operation and collaboration between agencies from all sectors, both nationally and internationally, is viewed by all concerned as very important, for example, The National Library of Australia has established PADI (Preserving Access to Digital Information)⁹ as a subject gateway to digital preservation resources.

2.3 Digital Preservation Coalition

In the UK, many different agencies from various sectors, including higher education, the heritage sector, industry, etc., have come together to form the Digital Preservation Coalition (DPC)¹⁰. It was established in 2001 to foster joint action to address the urgent challenges of securing the preservation of digital resources in the UK and to work with others internationally to secure our global digital memory and knowledge base. The Library is an associate member of the DPC.

⁴ See glossary

⁵ Jones & Beagrie *Preservation management of digital materials* (2001) p.10

⁶ Cedars (CURL exemplars in digital archives) was a project which addressed strategic, methodological and practical issues and provided guidance in best practice for digital preservation, <http://www.leeds.ac.uk/cedars/>

⁷ International Research on Permanent Authentic Records in Electronic Systems, <http://www.interpares.org/>

⁸ A project that is testing the feasibility and effectiveness of emulation for preserving the intellectual content, structure, and 'look-and-feel' of different types of digital materials, <http://www.si.umich.edu/CAMILEON/>

⁹ <http://www.nla.gov.au/padi/>

¹⁰ <http://www.dpconline.org/graphics/index.html>

2.4 Impact of new legislation relating to digital/non-print material

The Joint Committee on Voluntary Deposit (JCVD), which includes representatives of the legal deposit libraries and of publishers, is working with the Department for Culture, Media and Sport towards the introduction of a Bill to extend legal deposit legislation to electronic and other non-print based publications. Until the proposed generic legislation, and consequent secondary legislation, are in place it is not possible to quantify the preservation implications, but the Library's holdings of electronic publications are likely to increase dramatically. Should deposit be at a single library, with shared access via a secure network, the Library could expect to assume preservation responsibility for publications and websites emanating from Wales. However, there remains uncertainty with regard to future developments.

2.5 Other legislation

Recent legislation, such as the Freedom of Information and Data Protection Acts, as well as the UK Government's commitment to ensuring that all government services that can be delivered electronically are available online by 2005, requires a commitment by all organisations responsible for records to ensure that their electronic records are preserved and are accessible both currently and in the future.

2.6 Problems and issues of Digital Preservation

2.6.1 Intellectual control and physical media

One of the main problems of creating a policy and strategy for digital preservation is the sheer diversity and numbers of formats that require attention and digital preservation. All libraries and archives have legacy, as well as current digital material, that need to be accessed and preserved, and preservation strategies¹¹ need to be devised to deal with the variety of formats presented. However, the most cost-effective and efficient approach to digital preservation strategies is usually to address the intellectual content of each item, rather than the physical medium. However, the Library will aim to slow down the rate of deterioration of the physical media by ensuring proper environmental control, and by preventing physical damage to the media.

2.6.2 Life expectancy of digital material

Access to digital material is continually threatened by rapid technological obsolescence and machine dependency, and physical deterioration due to the inherent instability of the physical carriers and media. The speed of change means that action to preserve access needs to be taken sooner, rather than later.

¹¹ See glossary

2.6.3 Evolving standards and best practices

New international standards and best practices are currently evolving in the field of digital preservation. The fact that they are still developing poses some challenges for institutions wishing to develop and implement digital preservation policies and strategies; however, the existence of these emerging standards must not be ignored as they are being adopted internationally. Among the most relevant standards and best practice guidelines are the following: Trusted Digital Repositories: Attributes and Responsibilities¹²; Open Archival Information System (OAIS) Reference Model¹³; metadata standards e.g. METS¹⁴, Dublin Core¹⁵.

2.6.4 Organisational issues and responsibilities

All institutions that wish to implement a digital preservation policy and strategy need to ensure financial commitment and implement lifecycle management¹⁶ of digital materials. This means that a digital preservation programme must be incorporated into the workflow of the institution and an active management approach adopted at a digital resource's creation, where possible. The programme must also be adaptable and flexible due to the changing nature of technological developments.

2.6.5 Legal issues

There are many legal issues involved in digital preservation, especially copyright and Intellectual Property Rights issues, for example the IPR of the integral software supplied with digital material as well the resource itself. The field of licence agreements is also a complex one.

2.6.6 End-user expectations

End-users are increasingly expecting to be able to access digital resources and due to rapidly changing technology, continued access to these resources (selected in accordance with the Library's collection policy) is imperative.

2.6.7 Cost of digital preservation

It is apparent that the cost of digital preservation has far-reaching implications, e.g. the selection policies of libraries and archives may need to become more rigorous and selective in relation to digital resources and cost-effective solutions adopted, and institutions will need to take a more active managerial approach. However, it is widely accepted that although the costs of preserving digital

¹² The Online Computer Library Center (OCLC) and the Research Libraries Group (RLG) jointly have developed a working document to establish best practice: Attributes of a Digital Archive for Research Repositories and Preservation Metadata for Long-Term Retention, <http://www.rlg.org/longterm/repositories.pdf>

¹³ <http://www.ccsds.org/documents/pdf/CCSDS-650.0-B-1.pdf>

¹⁴ The METS schema is a standard for encoding descriptive, administrative, and structural metadata regarding objects within a digital library, expressed using XML, <http://www.loc.gov/standards/mets/>

¹⁵ <http://dublincore.org/>

¹⁶ See glossary

material might be high, the cost and implications of not preserving may be even higher.

2.7 Comparison with audiovisual heritage

An interesting and valid parallel with digital preservation is that of other modern materials, such as film, video and magnetic tape. A large proportion of the world's audiovisual heritage has been lost forever or is under threat due to the

- late realisation of its cultural and economic significance
- instability of the carriers used in its creation, e.g. film, even 'safety film', sound recording and videotape, and even CDs are susceptible to natural decay
- technological redundancy: - many audiovisual formats become unusable in the general sense due to the obsolescence of the hardware needed for playback – e.g. 9.5 m.m. film, 2" video, wax cylinders
- inadequate investment in archiving
- unsympathetic legislative framework

Audiovisual archivists have learnt that a combination of maintaining obsolete systems, together with a continual process of selection and copying onto current carriers, is the only way to ensure the survival of the sounds and images in their care. This is a similar situation to that which now faces the archivist dealing with digitised materials of all kinds. Lessons can be learnt from the audiovisual domain, in that to avoid the loss of what will inevitably be seen as important cultural items requires: -

- early realisation of the cultural and economic value of material
- a strategic approach to avoid major losses
- a sympathetic legislative environment
- early action
- timely and adequate investment
- a long term commitment to content refreshing

3 CONTEXT: INTERNAL

3.1 Proper Provision

The basis of the National Library's activities is determined by its Charter and the activities are set out in Corporate Plans. The most recent of these, *Digital Library, Open Library: Next Steps a corporate plan 2003-2004 to 2005-2006*, refers to the Library's five core functions, the first three of which are Collecting, Preserving and Giving Access and Information. None of these functions can be entirely fulfilled without proper provision for digital preservation.

From the point of view of this strategy, the most relevant Key Objectives in the Corporate Plan are KO5 (*Extend the Library's Digital Store to accommodate 'born digital' and digitised material*) and KO6 (*Acquire a Content and Digital Asset Management System*).

3.2 National Publishing Archive

As the National Publishing Archive, the Library has a duty to preserve the output of the publishing industry of Wales, and its commitment to the care and retention of born digital publications is equal to its commitment to the preservation of publications in print form.

3.3 Relationship with other internal policies and strategies

3.3.1 Preservation Policy

The Library's first Preservation Policy, adopted in 1998, looked at the range of materials held by the Library and put forward a five-year strategy to deal with what were seen as the priorities at that time. The strategy concentrated entirely on non-digital materials, since they made up by far the greater part of the Library's holdings.

The newly-developed techniques required for digital preservation are very different from the expertise needed for the preservation of traditional materials. Therefore, it was felt that the Library required a new and separate document establishing a Digital Preservation Policy which would complement the Preservation Policy.

The Library's Preservation Policy and Strategy for its collections of traditional materials will be reviewed in 2003-04 and it is intended to keep the relationship between the two spheres under continuous scrutiny.

3.3.2 Digitisation Strategy

The Library published a digitisation strategy, *Dros y Rhiniog: Crossing the threshold The National Library of Wales's Digitisation Strategy, 2001-2004*, in 2001. It refers to the digital archive and the need to address digital preservation issues (4.13). It also sets out a programme for digitisation. The programme is largely geared towards increasing access to the Library's collections although the use of digitisation as a conservation tool is also apparent, notably in the Geoff Charles Collection project (5.2.1.3, 5.2.2.5) whereby photographs are being digitised because the negatives are deteriorating.

3.3.3 Information Systems Strategy

The Library's Information Systems (IS) Strategy provides a basis for the harmonised development of information systems across the Library, and for setting budget priorities. The Strategy outlines the development, deployment and use of information systems in supporting the Library's mission and its institutional policies. It also highlights changes to the technical and business environments within which the strategy has been defined and determines what effects these changes have upon the strategy.

In order to keep pace with change, both in what is required of information systems and in what information systems can offer, the Strategy is reviewed and updated annually with a major review conducted every three years. A major review was undertaken in 2001 which resulted in the identification of nine projects and *Digitisation and digital preservation* was recognised as a separate project for the first time.

3.3.4 **Collection Development Policy**

As with 'traditional' material, not all digital resources can or should be kept. The Library's collection development policy is in the process of being reviewed¹⁷, and a key area of this review will be the impact of digital material on the Library's collection practices and procedures. It is expected that the Library will continue to seek comprehensive collection, and digital preservation, of e-publications published in Wales, together with selective digital preservation of websites emanating from Wales or relating to Wales, according to perceived value to future researchers. Preservation factors will be taken into account in negotiating the deposit of archives in electronic form, and in the acquisition of digital images, including photographs. Preservation of selected non-Welsh publications will be undertaken only as resources allow.

3.3.5 **Electronic records policy**

The policy on the deposit and storage of electronic archives of Welsh interest in the Library was produced in September 2001, following one of the key objectives stated in the 2001/2002-2003/2004 Corporate Plan. The aim of the policy is to ensure that the Library is able to preserve and make available electronic records that are being created by public bodies in Wales. The policy objectives are to ensure that reliable, authentic and preservable records are transferred to the Library, and that the Library is able to provide continuing access to these records.

In 2002, a pilot study was commenced to implement the policy with regard to three organisations, the purpose of which was to assess differing approaches to providing continuing access to, and preserving, these records. This policy will co-ordinate with the digital preservation policy and strategy to ensure a consistent approach to the maintenance and preservation of electronic records.

3.4 **Types of digital objects¹⁸ already held by the Library**

- 3.4.1 The Library has to deal increasingly with 'born digital' resources i.e. digital objects that have not been digitised, and have always been in digital form with no analogue equivalent. These pose more of a problem in preservation terms as the Library usually has little or no input or control at the creation stage, e.g. what standards are used. Born digital objects include:

¹⁷ The Library's new collection development policy will be ready in the spring of 2003

¹⁸ See glossary

- Digital publications received through voluntary deposit agreements e.g. CD ROMs, disks
- E-journals, e-books
- Databases
- Disks that accompany printed material
- Online publications received via e-mail, etc
- Disks that form part of archival collections
- Electronic records deposited by institutions as part of their archives
- Websites
- Time based materials, e.g. sound and video

3.4.2 The Library also has many digitised ('turned digital') resources i.e. a digital surrogate of an analogue original. These mainly include objects digitised at the Library which are created under the Library's control and therefore may be subject to lifecycle management. Examples include:

- The Library's digitisation products e.g. the Framed Works of Art project¹⁹, and the Treasures held on the Library's Digital Mirror site²⁰

3.4.3 Preservation of some material requires the copying of the content onto modern carriers, as is the case of nearly all time based materials (e.g. sound and video). It is unfeasible to copy such categories onto analogue formats and creating and preserving a digital copy is the only viable option.

4 POLICY

The Library is committed to these following aims, but its ability to fulfil/achieve them is of course dependent upon resources, both capital and revenue, being made available. The Library will:

- 4.1 Be committed to preserving and providing current and continued access to digital material both born digital and digitised material, selected by the Library, according to priorities set out in its collection development policy and management policies.
- 4.2 Be committed to lifecycle management which includes making decisions of retention, use and preservation of digital material, at the acquisition and/or creation stage.
- 4.3 Be committed to implementing relevant international standards (see 5):
 - Aims to become a trusted digital repository²¹ or equivalent recognised standard
 - Aims to conform with the Open Archival Information System (OAIS) Reference Model

¹⁹ <http://cairsweb.llgc.org.uk/ffraworks.htm>

²⁰ http://www.llgc.org.uk/drych/drych_s004.htm

²¹ <http://www.rlg.org/longterm/attributes01.pdf>

- Aims to apply metadata standards such as METS, Dublin Core
- 4.4 Address both intellectual content and physical medium, preserve material according to its intellectual content, and, in accordance with the Library's collection policy, define the significant properties of digital material. This will enable the Library, where appropriate, to preserve the 'look and feel' of the original.
- 4.5 Preserve the original bytestream of digital objects according to collection policy retention decisions.
- 4.6 Develop and implement digital preservation strategies, such as the following:
- Technology conservation: maintaining obsolete hardware and software as a means of access in the short to medium term
 - Refreshing: copying information content from one storage media to the same storage media
 - Migration: transferring digital resources from one hardware/software generation to another
 - Emulation: emulating obsolete hardware and software on future systems
 - Digital archaeology: methods and procedures to rescue content from damaged media or from obsolete or damaged hardware and software
 - Persistent identifiers: the name for a resource that will remain the same regardless of the resource's location, so that links to the resource will continue to work, even if it is moved
- 4.7 Select the most appropriate strategy for the preservation of the digital object. At present, migration and emulation are the most widely adopted strategies for the long-term preservation of digital resources. Migration procedures are well established, but migrating material may compromise the integrity of the original objects, may cause loss of functionality, and must be done regularly during the life of the resource. Emulation recreates the functionality, look and feel of the original, avoids repeated costs associated with migration, but has not been widely tested and it likely to be very expensive.
- 4.8 Develop and implement strategies and procedures, such as the following:
- Monitoring processes and programmes e.g. establish maintenance procedures and quality control
 - Ensure security of access to digital material and that users may be confident that any digital object is authentic
 - Continue to operate a disaster recovery programme and develop a business continuity plan
- 4.9 Be committed to research awareness and skills transfer and training:
- Provide appropriate skills training (technological and metadata creation) and increase awareness of digital preservation in the Library

- Keep abreast of technological change and monitor new developments in the digital preservation field, including an awareness of international standards
 - Take an active part in the Digital Preservation Coalition and its agenda to share expertise, foster collaborative projects, and raise awareness of current developments in digital preservation
- 4.10 Be committed to ensuring that its Digital Archive and surrounding infrastructure has sufficient capacity to accommodate and transmit all acquired data.
- 4.11 Be committed to provide continued access to materials selected for preservation:
- A Data Asset Management System will provide facilities for managing the digital collection and along with the Content Management System will enable access to the digital resources
 - An archival master copy will be kept in the Digital Archive; an access copy or copies will be available for access and use
 - Metadata,²² both for access and preservation, will be created and maintained in order to ensure continued access to all digital objects; it should be created automatically wherever possible

5 COOPERATION AND COLLABORATION

- 5.1 The Library will seek to establish a model for best practice in Wales and promote wider awareness of digital preservation standards within the nation. It is expected that national libraries provide models for best practice and the Library's policy is to conform to this expectation to the best of its ability. The Library possesses the skills to achieve this, but will require resources in order to be able to accomplish this aim. It expects to collaborate with CyMAL, the new body which is to be set up to develop and implement policies for local museums, libraries and archives in Wales.
- 5.2 The Library is currently an Associate Member of the Digital Preservation Coalition (see 2.3). It will work with other members of the DPC to build co-operation and collaboration within the UK and with international parties.
- 5.3 The Library is working with the other UK legal deposit libraries, through the Standing Committee on Legal Deposit (SCOLD) and the Joint Committee on Voluntary Deposit (JCVD), to promote co-operative programmes with regard to born digital publications.
- 5.4 The Library will collaborate and work with the Public Record Office's recently established Digital Preservation Department.
- 5.5 The Library is working with others in the UK and internationally to avoid duplication of effort e.g. Research Libraries Group, OCLC, Library of Congress, CURL, CERL.

²² See glossary

- 5.6 The Library has a commitment to existing co-operative programmes, such as Archives Network Wales, Gathering the Jewels, Culturenet Cymru and Newsplan.
- 5.7 The Library will continue to research and learn from the experience of others and participate in relevant developmental projects such as METS and Fedora.²³
- 5.8 The Library will work with content creators, publishers, etc. to encourage good practice to enable effective preservation (e.g. via JCVD discussions on metadata elements with the British Library and Book Industry Communication).
- 5.9 The Library will work with institutions and individuals depositing electronic archives, digital records, etc.
- 5.10 The Library will continue to be involved with existing cooperative programmes and ensure awareness of potential commercial ventures, such as the WDA's future plans for a Wales Data Centre.

6 CO-ORDINATION, REPORTING AND MONITORING

The Digital Preservation Committee, chaired by the Director of Collection Services, will provide advice to the Library's Senior Management Team.

7 POLICY REVIEW

The policy should be subjected to regular reviews to take account of technological changes in the field, emerging standards, etc.

²³ An open-source digital repository management System, <http://www.fedora.info/>

8 STRATEGY PLAN 2003-2006

8.1 Current resources

The following resources have been allocated / committed as the result of on-going and new pilot projects.

8.1.1 Staffing

A percentage of the time of the following staff will be allocated to tasks relating to the implementation of the strategy.

Job title	Department	Band
Head of systems	Collection Services	6
Systems manager	Collection Services	4/5
Systems archivist	Collection Services	4
Metadata manager	Collection services	4
Assistant Librarian	Collection Services	3
Head of computers	Corporate Services	6
Senior systems analyst x 2	Corporate Services	4/5
Digitisation – programmer x 2	Corporate Services	4
Digitisation -support	Corporate Services	3

8.1.2 Equipment / systems

Description	Note
Digital Archive	A collection of tape libraries, servers and disk storage systems providing mass storage solutions for the Library: <ul style="list-style-type: none">▪ HP Surestore 2/40 DLT tape library▪ HP Surestore 2/60 LTO tape library▪ ADIC Scalar 1000 LTO tape library
Greenstone Digital Library System	A Content Management System (CMS) provides an interim solution for web delivery of digital material.
Cocoon XML publishing and browsers	Web delivery of METS records and associated image files
Web-capture software	To date NetAttache Light and iPROXY have been used to capture web-based publications of relevance to the Political Archive and the WalesWatch website. If PANDORA is licensed for use in the UK the Library will assess this solution.

Sound and Moving Image material	This equipment allows the authoring and digital presentation of live events, archived sound and moving image and interpretive educationally based multimedia exhibition material to internal display areas and across the web to 200 simultaneous users. <ul style="list-style-type: none"> ▪ NT Video server ▪ Stream factory G2/ASF encoder / streaming solution ▪ Stream genie Dual stream compression unit
Database for IPR, Copyright	Creation of an ACCESS database to collect and manage details regarding rights of reproduction etc.

8.2 Funding available

Funding has been secured for certain developments in 2003-2004 and identified, but not yet secured, for subsequent years.

8.2.1 Capital

2003-04	2004-05	2005-06
£200,000 identified as capital requirement (to include Digital Archive, CMS and Web-archiving post) and allocated to the Digitisation Budget.	£275,000 identified as capital requirement (to include Digital Archive, CMS, Web-archiving post and Programmer)	£200,000 identified as capital requirement (to include Digital Archive, CMS, Web-archiving post and Programmer)
£25,000 identified as required for 'rolling-out' secure network solution to NLW and allocated to Networking Budget	£7,000 identified for maintaining secure network solution	£7,000 identified for maintaining secure network solution

8.2.2 Staff

Over and above the staff listed in 8.1.1 a Band 3/4 post will be appointed during 2003-04 with specific responsibility for web-archiving, and a research post into organisational responsibilities for electronic records management will be funded by the Library and the Economic and Social Research Council.

8.2.3 Other sources of funding

The Library continues to provide technical support for Gathering the Jewels Ltd. which includes storage of master images on the Digital Archive. The advent of Culturenet Cymru may present other opportunities to provide IT support. Payment for these services will be made to the Library.

8.3 Implementation

- ✓ Underway / on-going
- * Dependent on funding

No.	RECOMMENDATION	IMPLEMENTATION ACTION	TIMESCALE		
			2003-04	2004-05	2005-06
8.3.1 8.3.1.1	Collection Development Policy (3.3.4)	Complete and implement the policy.	✓	✓	✓
8.3.2 8.3.2.1 8.3.2.2 8.3.2.3	Legacy formats: (3.4)	<p>Complete the survey of formats and hardware already in the Library.</p> <p>Technology conservation:</p> <ul style="list-style-type: none"> ▪ investigate the feasibility of maintaining obsolete hardware and software as a short to medium term solution for access provision. ▪ Investigate the feasibility of buying-in services, and / or collaborating with external agencies, e.g. PRO. <p>Develop procedures for access to, and the preservation of records, according to retention decisions.</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>Dependent on findings</p> <p>* Dependent on findings</p>	

8.3.3	Digital archive: (4.10)				
8.3.3.1		The Library will continue to develop and maintain its central data archive to meet the storage requirements of the Digital Preservation Strategy. It aims to increase storage capacity to at least 36 terabytes by 2004, to at least 72 terabytes by 2005 reaching a total of at least 108 terabytes by 2006.	✓	✓*	✓*
8.3.3.2		Continue to monitor the rapid developments in data storage technology.	✓	✓	✓
8.3.3.3		The Library will develop a strategy for future upgrading of the Data Archive taking advantage of the latest available technology e.g. the addition of other libraries using Tape or Magneto- Optical or Magnetic or other technology. Thus ensuring that the Library should always have many options available for data storage.	✓	Review	Review
8.3.3.4		Continue to operate a disaster recovery programme as part of the Library's overall Business Continuity Plan.	✓	✓	✓

8.3.4	Preservation Strategies (4.6)				
8.3.4.1		Continue to investigate refreshing, migration, emulation as methods of digital preservation and select the most appropriate strategy for the preservation of the object.	✓	✓	✓
8.3.4.2		Continue to review current formats, assess their preservation requirements and implement, test and develop appropriate digital preservation strategies, and develop procedures to define significant properties of digital items.	✓	Review	Review
8.3.4.3		Develop file format review procedures to ensure that the most current/appropriate formats are being used.	✓	Review	Review
8.3.4.4		Develop and implement preservation metadata schemas, based on relevant best practice guidelines and standards, for digital material held in the Library, and implement procedures for the automatic creation of metadata where appropriate.	✓	Review	Review
8.3.4.5		Implement procedures to manage the life-cycle of the digital material and assure quality control, security of information and access, and maintenance procedures.	✓	✓	✓

8.3.5	Material covered by voluntary agreement and statutory acts (2.4)				
8.3.5.1		Continue to work with JCVD, and assume preservation responsibility for Welsh publications and websites, if deposit is at a single library with shared access.	✓	✓	✓
8.3.5.2		Implement the ‘secure network’ solution tested during 2002-2003. Once rolled-out to the legal deposit libraries this solution will ensure secure access provision to a wide range of digital materials	✓ Dependent on external developments	✓*	✓*
8.3.5.3		Develop workflow patterns for Welsh and Welsh interest electronic resources from acquisitions to access – including selection, metadata creation and / or capture, preservation and access provision.	✓	Review	Review
8.3.6	Content management System / Data Asset Management System (4.11)				
8.3.6.1		Document the findings of the pilot project undertaken during 2002-03 and analyse the results. Prepare an outline specification for the DAMS.	✓		
8.3.6.2		Continue to implement Greenstone as the CMS for differing categories of digital resources including sound and moving image material.	✓	Review	

8.3.7 8.3.7.1	Web-archiving	Implement the Web-archiving Pilot Project which will collect 100 websites of relevance to Wales. This project will investigate selection criteria, methods of collection, rights issues, archival storage, provision of metadata and access to these resources.	✓	✓*	✓*
8.3.7.2		Take an active part in the work of the Digital Preservation Coalition's Web-archiving Special Interest Group.	✓	✓	✓
8.3.7.3		Select software for web archiving, develop workflow patterns from acquisition to access – including capture, metadata provision, archival copy, access provision, rights.	✓	✓*	✓*
8.3.7.4		Ensure that the web publications captured to date using NetAttache Light and iPROXY are archived, catalogued and that access is provided.	✓		

8.3.8	Electronic records (3.3.5)				
8.3.8.1		Analyse the results of the electronic records pilot project. Establish procedures for the selection, transfer, preservation and accessibility of electronic records.	✓	✓	
8.3.8.2		Continue to research and develop the project to manage, store and catalogue e-mails accumulated by individuals whose papers are or will be selected for retention. The project is in collaboration with the BL, and other interested agencies.	✓	✓*	✓*
8.3.8.3		Implement records management procedures to ensure compliance with Freedom of Information, Data Protection Acts.	✓	Review	Review
8.3.8.4		Investigate the functionality of an Electronic Records Management System and the possibility of collaborating with other agencies in obtaining a shared system. (Depending on investigation).	✓	✓*	✓*

8.3.9	Sound and Moving Image Material				
8.3.9.1		The Library will continue to investigate the opportunities of extending its services by considering what output files and formats can be produced which capitalise on the work being undertaken to digitise large parts of the core collections.	✓	✓*	✓*
8.3.9.2		The Library will ensure adequate resource and timely training to develop staff competencies in this specialised area prior to undertaking a series of pilot projects to digitise and deliver a range of materials from the NSSAW collection and web casting of live events.	✓	✓*	✓*
8.3.10	Standards (4.3)				
8.3.10.1		Investigate the resource implications of conformance with the OAIS reference model, and assess what is required in order to become a trusted digital repository, or its equivalent.	✓	✓	
8.3.10.2		Continue to implement international technical and metadata standards and ensure that knowledge is current in terms of development.	✓	✓	✓

8.3.11	Training and workflow (4.9)				
8.3.11.1		An assessment/confirmation of training needs will be undertaken and appropriate training provided. This will entail buying in external expertise as well as skills transfer through internal training programmes.	✓	Review	Review
8.3.11.2		Implement a programme of training in metadata creation, and technical skills, such as file format transfers, to ensure conformity with the standards and establish procedures to ensure digital material is accommodated within the workflow structures in the Library.	✓	✓	✓
8.3.12	Collaboration and partnership (5)				
8.3.12.1		Take an active part in the work of the DPC, JVCD and SCOLD. Collaborate with existing projects and seek new ventures.	✓	✓	✓
8.3.12.2		Develop relationships with content creators and provide training and guidelines to encourage them to adhere to standards and procedures.	✓	✓	✓
8.3.12.3		Investigate methods of sharing skills, knowledge and expertise with other agencies within Wales, for example, Culturenet Cymru and beyond.	✓	✓	✓

8.3.13 8.3.13.1	Review (7)	The strategy will be reviewed annually to ensure currency in respect of technical developments and resources available.	✓	✓	✓
----------------------------------	-------------------	---	---	---	---

GLOSSARY

Digital archaeology	Methods and procedures to rescue content from damaged media or from obsolete or damaged hardware and software.
Digital objects	Digital materials, both surrogates and 'born digital', including time-based material.
Digital preservation	The implementation of a series of actions to enable the continued ability to display, retrieve and use digital materials, despite changes in technology or organisational infrastructures.
Digital preservation strategies	Use of migration, emulation, refreshing, etc. as a strategy for digital preservation.
Emulation	Emulating obsolete hardware and software on future systems.
Life-cycle management	A term familiar in records management, used here to mean the need for active management of digital resources at each stage of their life-cycle.
Metadata	Metadata is information that makes it possible to find, access, use, and manage information resources.
Migration	Transferring digital resources from one hardware/software generation to another
Persistent identifiers	The name for a resource that will remain the same regardless of the resource's location, so that links to the resource will continue to work even if it is moved.
Refreshing	Copying information content from one storage media to the same storage media.

Technology conservation	Maintaining obsolete hardware and software as a means of access short to medium term)