



# British Library Digital Preservation Strategy

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*2013 - 2016*

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## Executive Summary

The British Library is increasingly a digital library. Our digital library store already holds over 11,500,000 items and more are added every day. With acquisition comes responsibility: we must preserve and make this content accessible for our future users. As a national library, this is at the heart of our mission. Yet preservation of digital content is not straightforward. It requires action and intervention throughout the lifecycle, far earlier and more frequently than does our physical collection. This strategy is the first of a two-part series outlining the framework by which we will achieve our mission, so that by 2020, end-to-end workflows are in place that deliver and preserve our digital collections in a trusted long term digital repository that they may be accessed by future users.

Since 2002, we have been working hard to ensure our digital collections can be reliably preserved. As an 'early adopter' in digital preservation, we have played a leading role in the international digital preservation R&D community. Simultaneously, we have developed and enhanced our digital library system and workflows to embed support for long term preservation through such functionality as integrity and fixity checking, content stabilisation, format validation and file characterisation, delivering projects focusing on specific types of content or formats. We must now consolidate this work to confidently, reliably, and cost-effectively manage and preserve **all** types of digital content destined for long term preservation and embed best practice in digital collection content management in all areas of the Library.

This strategy builds upon our previous work and outlines four strategic priorities to be met by 2016:

*1. Ensure our digital repository can store and preserve our collections for the long term:* establish and invoke preservation plans for all content stored in our repository, identify and implement essential preservation tools to avoid technological obsolescence and ensure content can be reliably accessed long into the future, and assess our approach against a recognised preservation repository audit methodology.

*2. Manage the risks and challenges associated with digital preservation throughout the digital collection content lifecycle:* establish the Digital Preservation Centre of Excellence as the focal point for R&D into best practices in managing digital preservation risks, embed digital preservation risk management practices into our corporate collection risk management activities, and implement end to end workflows for digital content to minimise the risks of incompatible or inconsistent working practices.

*3. Embed digital sustainability as an organisational principle for digital library planning and development:* consider sustainability from the planning phase when engaging in new partnerships and projects, and train staff in sustainability principles so that they may be embedded throughout the Library.

*4. Benefit from collaboration with other national and international institutions on digital preservation initiatives:* continue to collaborate on an international scale with appropriate partners in order to address business needs.

Digital preservation is a lifecycle concern and an organisation's shared responsibility. This strategy recognises this and implements a cross-directorate governance structure to ensure it can be achieved. Implementation of the strategy will be monitored by the Collection Management Steering

Group, on the advice of the Head of Digital Preservation: responsibility **does not** rest with the digital preservation team alone. Our action plan identifies the essential activities required to successfully deliver on our strategic priorities, utilising staff from directorates and teams across the Library.

*Acknowledgements:*

*This strategy has been produced by the British Library's Head of Digital Preservation, with input from colleagues in the Digital Preservation Team and others in teams throughout the Library. It has also benefitted from external input: from Adrian Brown (Head of Preservation & Access at the Parliamentary Archives), William Kilbride (Executive Director of the Digital Preservation Coalition), Bill LeFurgy (Digital Initiatives Manager at the Library of Congress), Nancy Y McGovern (Head of Digital Preservation & Curation at MIT), Dave Thompson (Digital Curator at the Wellcome Library), and Bram van der Werf (Executive Director of the Open Planets Foundation).*

## 1 Introduction

Preservation of our collections is fundamental to the success of the British Library: if we cannot preserve them, we will fail in our core mission to enable access for future generations. This is no less true for digital collections than for our traditional collections. Yet over the very long term, the inherent instability and transient nature of digital content makes preservation a significant challenge, one faced not just by the Library but by institutions worldwide.

This strategy delivers a framework within which technical solutions for Library content can be developed and implemented to mitigate the technical risks associated with longevity, whilst simultaneously addressing the cultural and organisational challenges required to ensure continuous and consistent management of our digital collections throughout their entire lifecycle.

## 2 Background

The British Library is increasingly a digital library. In the past two decades we have embarked on numerous digitisation initiatives to create digital surrogates of Library treasures including the Beowulf manuscript, the Lindisfarne Gospels, Shakespeare Folios, the Magna Carta, rare stamps and musical manuscripts from Handel, Bach, and Mozart. More recently we have entered the world of mass digitisation projects, for example, the Google books project and the Brightsolid newspaper digitisation programme. At the same time we have been acquiring an increasing amount of born digital content: starting in the late 1990's with digital map deposits, we now have a sizable collection of born digital content ranging from digital audio/video recordings, to personal digital archives, eJournals and archived websites. In all, we estimate we already have over 280 terabytes of collection content – or over 11,500,000 million items - stored in our long term digital library system, with more awaiting ingest. The onset of non-print legal deposit legislation will significantly increase our annual digital acquisitions: 4.8 million websites, 120,000 e-journal articles and 12,000 e-books will be collected in the first year alone (FY 13/14). We expect that the total size of our collection will increase massively in future years to around 5 petabytes by 2020.

With acquisition comes responsibility. We must be able to adequately preserve our collection content for access by future users, regardless of form. We have well-established processes to achieve this for physical items. We have yet to establish the same for our digital collections. Technological obsolescence is often regarded as the greatest technical threat to preserving digital material: as technology changes, it becomes increasingly difficult to reliably access content created on and intended to be accessed on older computing platforms. Yet this is just the long term view: in the shorter term we must also consider everything from media integrity and bit rot to digital rights management and metadata. Technical solutions and processes are required to ensure our digital artefacts are reliably accessible today, tomorrow, and for generations to come. We must be able to proactively manage our response to technological change across many generations of technology.

There are some other notable differences between analogue and digital content that further add to the challenge:

- **Proactive Lifecycle management.** The ever-changing nature of the technology and the fragility of digital content means *preservation actions can be needed from much earlier in the lifecycle than for traditional collections, and at a much greater frequency.* A lifecycle management approach is therefore needed to ensure appropriate actions are taken in good time. This requires significantly more early involvement than with analogue content, both within and between institutions and content caretakers.<sup>1</sup>
- **Integrity & validation.** It is *easier to make unnoticed changes to digital files than to traditional objects, changes which may affect the authenticity and integrity of the content.* It is also often necessary to do so, in order to manage and ensure access over time. Malicious change must be prevented and non-malicious change tightly controlled. There are both technical and organisational challenges associated with this, to ensure the continued integrity, authenticity, validation and history of digital content.
- **Fragility of storage media.** The media upon which digital materials are stored is often unstable and its reliability diminishes over time. This can be exacerbated by unsuitable storage conditions and handling. The resulting *bit rot can prevent files from rendering correctly if at all; this can happen with no notice and within just a few years, sometimes less, of the media being produced.*

Digital preservation is thus not just a technical challenge. It comprises a whole 'series of actions and interventions throughout the lifecycle to ensure continued & reliable access to authentic digital objects for as long as they are deemed to be of value'.<sup>2</sup> Action and intervention is required from before even the point of acquisition, in order to properly manage the risks involved in maintaining digital content for the long term. Only through a comprehensive lifecycle approach can these risks be addressed in a consistent and controlled manner. Furthermore, the strategies we implement must be regularly re-assessed: technologies and technical infrastructures will continue to evolve, so preservation solutions may themselves become obsolete if not regularly re-validated in each new technological environment. Only in this way can we ensure that our digital collections remain reliably accessible and authentic for future users in the very long term.

Digital preservation is not just a British Library concern. Digital collections are growing in cultural heritage institutions around the world, as well as private, scientific, educational and other government bodies. Despite our varying contexts, we all face the same fundamental challenges and can benefit from similar types of tools, standards and solutions. An important element of this strategy is maximising the opportunities that arise from collaboration with institutions facing similar challenges, particularly at scale, whilst ensuring outputs are produced and implemented that meet broad Library needs and achieve the maximum return on investment.

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<sup>1</sup> Digital Preservation Handbook, DPC (2008)  
<http://www.dpconline.org/advice/preservationhandbook/digital-preservation/strategic-overview> pp 32 - 33

<sup>2</sup> JISC Briefing Paper: Digital Preservation (2006)  
[http://www.jisc.ac.uk/publications/briefingpapers/2006/pub\\_digipreservationbp.aspx#](http://www.jisc.ac.uk/publications/briefingpapers/2006/pub_digipreservationbp.aspx#)

### 3 Vision

Our vision for digital preservation in the British Library is that by 2020, end-to-end workflows are in place that deliver and preserve our digital collections in a trusted long term digital repository so that they may be accessed by future users. This is fundamental if we are to achieve our corporate 2020 Vision and guarantee access to future generations.<sup>3</sup>

### 4 Purpose

This document builds upon and replaces the outline ten year digital preservation strategy issued in 2006 and provides the framework for the British Library's digital preservation activity over the next three years (2013 – 2016). It is the first of a two part strategy to achieve our corporate vision for digital preservation, building on progress to date and placing planned activities clearly in context of the current operational and strategic environment. It clearly identifies our strategic priorities, the roles and responsibilities of those tasked with delivering the strategy, and the metrics by which our success will be measured.

This is a corporate strategy, relevant to all staff with a responsibility for digital collection content and metadata at any stage of the lifecycle.

### 5 Strategic Fit

*'As a guarantor of continued public access to both our rich legacy of content and new forms of digital content, it is essential that we take a long-term view'.<sup>4</sup>*

The Library's 2020 Vision makes clear our core objective to 'preserve the intellectual memory of the nation'. As this includes our digital memory, it implies a clear, corporate commitment to the preservation of our digital materials alongside our physical materials. The implication is made firm in the corporate strategy for 2011 – 2015 ('Growing Knowledge'), which establishes guaranteed access for future generations as our number one corporate strategic priority. The Library's ambition in this context is to 'preserve digital content for the long term in order to safeguard our intellectual heritage so that it can be used by future generations of researchers'. Digital preservation is the foundation upon which our ability to achieve this strategic priority is built, responsibility for which is shared right across the Library.

The Library's IT strategy (2011 – 2015) identifies the capabilities and initiatives required to support our corporate strategic priorities, including development and deployment of strategies and processes to ensure the longevity of our digital collection content beyond the life of the hardware platform that originally created and viewed it. It states a clear preference for developing

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<sup>3</sup> British Library 2020 Vision  
<http://www.bl.uk/aboutus/stratpolprog/2020vision/2020A3.pdf> (2010)

<sup>4</sup> Ibid

partnerships across the private and public sectors to reduce the cost and risk of delivering new services, through joint projects and where possible external funding. The technical architectural principles specified in the strategy require use of off-the-shelf, *un-customised*, 'back office' components, which are generally pre-optimised by their vendors to support best practice processes and will often provide the best value for money. However, as the commercial marketplace for digital preservation solutions has historically been relatively small, the IT strategy anticipates that a membership/partnership model is most likely to be utilised for digital preservation.

## 6 Digital Preservation achievements 2006 - 2012

The Library's first digital preservation strategy was produced in 2006. It had four objectives:

1. Preserving the British Library's digital collections within the [then] Digital Object Management System.
2. Embedding knowledge and experience of digital preservation issues within policy and practice across The British Library.
3. Contributing to and implementing digital preservation best practices.
4. Collaborating nationally and internationally with the key players in digital preservation.

The Library's Digital Preservation Team led the R&D efforts required to make progress across these four objectives. The 2007 Digital Preservation Risk Assessment identified a number of risks threatening long term viability of collection content stored on hand-held media. Tools and processes have been developed to mitigate against these risks, particularly for data stabilisation and quality assurance of digitised images, and high risk content prioritised for ingest into our long term repository.

Operational teams across the Library have ingested a sizable amount of digital collection content into our long term repository, with workflows that support preservation through functions such as characterisation and validation. The preservation platform for our long term repository is still under development: this work was started in the PLANETS project (2006 – 2010) and continues in the SCAPE project (2011 – 2014), delivering essential preservation components and/or prototypes to ensure objects remain accessible despite technological changes over time.

Much of the preservation guidance and advice provided to colleagues is based on experiences and knowledge generated through participation in externally funded projects, including not only PLANETS and SCAPE, but also LIFE (2005 – 2010), AQUA (2011), APARSEN (2011 – 2015) and SPRUCE (2012 – 2013). Digital preservation staff have contributed to many international digital preservation conferences and standards, including iPres, IDCC, PREMIS and METS. The Library is a founding member of the Digital Preservation Coalition (2002) and the Open Planets Foundation (2011). As a result of these many collaborative initiatives, the Library has a very high profile on the international digital preservation stage.

## 7 Strategic Priorities for Digital Preservation 2013 – 2016

Our four strategic priorities are the high level objectives that will progress us towards our vision. Each priority is accompanied by a series of actions. These priorities are aligned with the Library's overall approach to Collection Care and our five principles of sustainable stewardship: to predict, protect, prioritise, preserve, and enable.<sup>5</sup>

We focus in the first instance on tools and functionality for very large scale preservation in our long term repository, benefitting from and contributing to collaborative initiatives where appropriate. Taking a lifecycle approach to digital preservation, we will also identify and address the risks associated with preserving digital content prior to ingest, and apply tools and workflows to manage these. Alongside the technical solutions, we will work to embed digital sustainability as a key organisational principle underpinning all digital collection activities across the library.

### **Strategic Priority 1: Ensure our digital repository can store and preserve our collections for the long term.**

The British Library's long term digital repository stores vast amounts of collection assets that need to be held in perpetuity. To enable long term preservation of its content, we will:

- Test different technical strategies such as migration, emulation and normalisation, so that we can identify appropriate large scale approaches and tools to combat technological obsolescence;
- Identify and implement essential preservation tools within the long term digital repository, so that we can use them to reliably preserve our collections for future re-use;
- Devise preservation plans for all major types of digital collection content held in the repository, so that we can invoke the necessary preservation tools in a timely manner;
- Monitor file integrity, so that we may identify corrupt files and act accordingly to ensure only files with their integrity intact are delivered to users;
- Utilise shared technical digital preservation services where appropriate such as representation information registries, so that we do not unnecessarily duplicate effort;
- Audit the repository against a recognised digital preservation repository audit methodology, so that we may independently validate our approach and measure our progress over time.

### **Strategic Priority 2: Manage the risks and challenges associated with digital preservation throughout the digital collection content lifecycle**

The risks associated with long term preservation take many forms and prevail throughout the lifecycle. To ensure the continued authenticity and integrity of resources throughout this time, both before and after ingest into our repository, we will:

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<sup>5</sup> British Library 2013, *Our Approach to Collection Care*, (forthcoming)

- Establish the Digital Preservation Centre of Excellence as the focal point for lifecycle-based digital preservation research and advice, so that we can deliver consistent and evidence-based advice on managing digital preservation risks throughout the content lifecycle;
- Clearly define our technical requirements and collection policies for preservation throughout the lifecycle, so that we can ensure preservation needs are known and can be addressed as and when relevant.
- Integrate digital preservation risk management into our collection management and risk management strategies, so that digital risks are treated comparably with those facing analogue content and regular preservation risk assessments are undertaken;
- Implement rigorous quality assurance processes for digitised content, so that we can identify content of inadequate quality before it enters the preservation workflow;
- Implement tools and end to end workflows for digital content, so that we constantly and consistently control the risks associated with receiving, managing, processing and ingesting digital collection content;
- Ingest valid legacy digital content into our long term repository as soon as possible, so that distributed and inconsistent storage and management practices are minimised and the risks associated with such practices addressed.

### **Strategic Priority 3: Embed digital sustainability as an organisational principle for digital library planning and development**

Sustainable digital preservation requires not just technical solutions but also clear organisational commitment and resources. We will:

- Document our relevant policies, procedures, standards, and systems development, so that they may be sustained, audited, and understood over time;
- Plan and budget for long term preservation of content at point of acquisition, so that financial sustainability is considered early in the lifecycle;
- Consider sustainability in all future system procurement exercises and content oriented partnerships, so that we enter new initiatives with a long term vision and plan;
- Ensure that all staff working with a responsibility for digital content understand the issues associated with preserving it, so that sustainability and preservation become an embedded consideration when developing and planning new systems and workflows.

### **Strategic Priority 4: Benefit from collaboration with other national and international institutions on digital preservation initiatives**

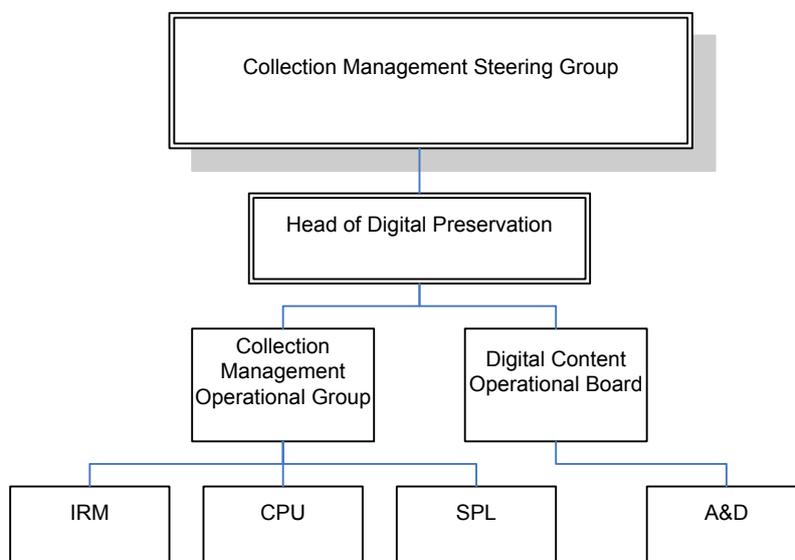
Digital preservation is a global issue. Effective and efficient collaboration is key to solving our shared problems in a timely fashion and minimising duplication of effort. We will:

- Seek out appropriate opportunities to collaborate with other institutions and organisations on digital preservation initiatives that meet our business needs, so that we may benefit from shared resources available to address shared challenges.
- Deliver successful contributions to collaborative projects already underway, including the APARSEN, SCAPE and SPRUCE projects, so that we meet existing commitments and maintain the Library's place at the cutting-edge of international collaborative digital preservation R&D;
- Exchange knowledge and expertise across the wider international digital preservation and digital cultural heritage communities, so that other institutions may learn from our work and providing opportunities to identify potential future partners with similar interests;
- Ensure our collaboration with professional digital preservation membership organisations (such as the Open Planets Foundation and the Digital Preservation Coalition) is in line with organisational requirements, so as to achieve the maximum return on investment in terms of time, effort, and financial commitment.

## 8 Governance

An effective governance framework is essential to deliver the diverse organisational components of this strategy. This governance framework reflects the fact that digital preservation requires consistency of care across the entire lifecycle and cannot be achieved in isolation.

The Collection Management Steering Group, headed by the Director of Collections, will have governance over this strategy. The Head of Digital Preservation is responsible for updating the Collection Management Steering Group on progress and major issues over the term of the strategy, liaising with several core units across the Library:



**Figure 1: Governance**

### Roles and Responsibilities

The Head of Digital Preservation leads the Digital Preservation Team (DPT), an R&D unit that determines appropriate digital preservation tools, practices and policies for the Library; these are delivered to other units spread across the library for implementation. DPT in turn relies upon these units for timely notification of new projects and initiatives that may require preservation expertise.

The units are:

- The Collection Management Operational Group (CMOG): co-chaired by the Head of Collection Care with the Head of Collection, Acquisition & Description, CMOG is responsible for enabling lifecycle management of collection content across the Library. CMOG will cascade issues from the Collection Management Steering group down to IRM, CPU and SPL (see below). It will also cascade instructions to other groups as required, including but not limited to curatorial teams and Collection Care. The Head of Digital Preservation sits on this group.

- The Digital Content Operational Board (DCOB): led by the Head of Collection, Acquisition & Description, DCOB addresses operational and infrastructural issues relating to the delivery of our digital capability. DCOB will cascade digital preservation advice and requirements down to A&D and other relevant operational groups as required, including but not limited to Digital Processing and Technical Operations. The Head of Digital Preservation sits on this group.
- Architecture & Development (A&D): led by the Head of Architecture and Development, this group will embed the recommended digital preservation solutions in the Library's long term digital repository.
- Corporate Procurement Unit (CPU): The Head of Procurement is responsible for ensuring that procurement adheres to the objectives outlined in this document.
- Strategic Partnerships & Licensing (SPL): The Head of Strategic Partnerships & Licensing is responsible for ensuring that partnerships and licensing arrangements adhere to the objectives outlined in this document.
- Integrated Risk Management (IRM): led by the Head of Integrated Risk Management, this team carries out risk assessments in the Library, including risk assessment and audits relating to digital collections.

## 9 Resources

As digital preservation is a lifecycle concern, the costs of digital preservation are dispersed across the entire lifecycle. Published cost models for digital preservation, such as the LIFE3 model developed by the British Library and UCL, recognise this. They are typically lifecycle activity based (e.g. create, acquire, QA) rather than type based (e.g. personnel & equipment costs). This makes it difficult to use them for addressing the costs of delivering this strategy: we are not starting with a clean slate and many initiatives for digital content are already in progress and are funded, but the processes they follow require some modification to ensure outputs are consistent with preservation best practice.

The Library will continue to embrace digital content and services in the pursuit of its 2020 vision. This increase in content, at the same time as a period of reduced resources, means that effective resource allocation and prioritisation are essential. Resource allocation and prioritisation must recognise the importance of digital preservation and sustainability to the library's core mission and vision. The Head of Digital Preservation is responsible for resource allocation within the digital preservation team. Resources are allocated to ensure externally funded project commitments can be met in line with contractual arrangements, and projects that enable the Library to meet the strategic priorities identified in this strategy will themselves be prioritised. Other units outlined above are responsible for allocating their own resource as necessary, in line with the core principles and priorities outlined in this strategy.

## 10 Metrics

Metrics relating to our strategic priorities must be recorded and monitored to measure our progress.

These key metrics will be reported quarterly to the Collection Management Steering Group and annually to the Library's Executive Team.

Metric	Aspiration (by 2016, unless otherwise stated)	Relevant Strategic Priority (SP)
Number of DPT approved preservation tools/services utilised in conjunction with our long term repository	Ten	SP1
Percentage of repository content streams with preservation plans	100%	SP1
Number of community tools, extensions or prototypes developed or enhanced	Five	SP1
Number of completed repository preservation audits	Two	SP1
Number of digital preservation tools evaluated per year	Ten	SP1, SP2
Number of local risk assessment exercises completed and actioned per year	Twenty four local assessments per year (minimum)	SP2
Percentage of digitised content subject to quality assurance checks to ensure content is of acceptable quality for preservation	100%	SP2
Volume of collection content stored outside of DLS that is destined for long term preservation	None	SP2
Percentage of new digitisation project business cases with integrated sustainability plans	100%	SP3
Number of digital preservation training/educational courses hosted for non-digital preservation staff	Two per year	SP3
Number of externally published papers/presentations about digital preservation activities at the Library	Five per year (minimum)	SP4
Deliver to collaborative projects SCAPE, APARSEN & SPRUCE as per project plans	Variable (details in each project plan)	SP4
Percentage of membership benefit assessments returning majority positive results	100%	SP4

## 11 Risks

This section notes the key risks to delivering the Library's digital preservation strategy. These risks will be monitored and updated on a quarterly basis by the Head of Digital Preservation.

Ref.	Risk(s)	Impact (H, M, L)	Probability (H, M, L)	Mitigating Action	Owner
01	Collaboration by different groups & directorates may be difficult to achieve	M	M	Ensure strategy sign off at appropriately high level; engage in communications and outreach programme to clarify necessity of approach; share and clarify responsibilities.	CMSG
02	Library funding may not cover the full cost of delivering the digital preservation strategy	H	M	If less funding is available than currently budgeted, seek external funding; assign priorities.	CMSG
03	Staff may not have the skills or experience required to deliver the digital preservation strategy	H	M	Audit existing skills to identify key gaps. Create a combined mentoring, training and development programme to develop skills in our existing staff; invite peers to comment/review.	CMOG/ DCOB
04	We may not be able to recruit and retain staff with the skills and knowledge we require, or to move staff between functional areas in the Library in line with requirements	H	M	Create a programme that assists staff to broaden their skills; embed digital preservation and sustainability knowledge in areas across the Library to enable continuity despite inevitable staff turnover.	CMOG/ DCOB
05	Externally funded, collaborative projects may not deliver in line with expectations and Library requirements	H	M	Focus project activities on tools required by the Library; ensure business needs are identified and fed into project; assume leading technical role in projects	Head of DP

<b>Ref.</b>	<b>Risk(s)</b>	<b>Impact (H, M, L)</b>	<b>Probability (H, M, L)</b>	<b>Mitigating Action</b>	<b>Owner</b>
06	Digital preservation is considered solely the responsibility of the digital preservation team	H	M	Strategy approved by CMOG; senior colleagues champion strategy across directorates; outreach and communications programme; training.	CMOG/ DCOB
07	Fee-based membership organisations do not deliver sufficient benefits	L	M	Consultation with member organisation; explore alternative options	Head of DP

# Appendix

## 1.1 Glossary

Term	Definition
Access	The act of making files and content available to users
Accessibility	The ability to access intellectual content held in files
Acquisition	The process of acquiring records from any source
APARSEN project	APARSEN (2011 – 2015) is a 4 year EU co-funded project to develop a Network of Excellence of digital preservation practitioner organisations and researchers, led by STFC. The British Library is a partner in this project.
Authenticity	The quality of being genuine and free from tampering or alternation, malicious or otherwise
Characterisation	The process by which significant technical properties of a digital object are extracted, including but not limited to format identification, format validation, and metadata extraction
Characterisation tools	Tools that automate the characterisation process
Content stream	A collection of content of the same type (e.g. multimedia files, newspapers, manuscripts, digitised books), stored in the long term repository.
Digital collections	One or more groups of digital materials with a unifying characteristic
Digital preservation	The series of actions and interventions required to ensure continued and reliable access to authentic digital objects for as long as they are deemed to be of value
Digital Preservation Coalition (DPC)	Not-for-profit member organisation founded in 2002 to support members in delivering long term access to digital content through knowledge exchange, capacity building, assurance, advocacy and partnership.
Digital repository	A technical system for managing and storing digital content
Emulation	A technical digital preservation strategy that overcomes technological obsolescence of hardware and software by developing techniques for imitating obsolete systems on future generations of computers.
End to end workflow	A complete and unbroken sequence of connected steps for managing digital content across the lifecycle.
Ingest	One of the functions listed in the framework for OAIS. It involves taking an object (or objects) into a digital repository.
International Internet Preservation Consortium (IIPC)	The IIPC is a membership organization dedicated to improving the tools, standards and best practices of web archiving while promoting international collaboration and the broad access and use of web archives for research and

	cultural heritage
Lifecycle	All of the distinct stages of an objects existence, from conception or creation, through to disposition or access and re-use. The <a href="#">DCC lifecycle model</a> provides a graphical, high level overview of the stages involved.
Metadata	Data about data, or information that describes a resource. Preservation metadata is a particular class of metadata that supports and documents the process of digital preservation, specifically supporting the functions of maintaining the fixity, viability, renderability, understandability, and/or authenticity of digital materials in a preservation context.
Migration	A technical digital preservation strategy that overcomes technological obsolescence by transferring digital resources from one hardware/software generation to the next.
Normalisation (databases)	The process of standardising and de-duplicating data in fields and tables.
Open Archival Information System (OAIS)	A high level model that describes the components and processes necessary for a digital archives, including six distinct functional areas: ingest, archival storage, data management, administration, preservation planning, and access. Developed by the CCSDS, it is now an ISO standard (14721). [ISO16363 is a related standard for trustworthy digital repositories that is based on OAIS and TRAC (Trustworthy Repositories Audit Checklist)]
Open Planets Foundation (OPF)	The Open Planets Foundation was established in 2010 to provide practical solutions and expertise in digital preservation, building on the research and development outputs of the PLANETS project. It is a member organisation that addresses core digital preservation challenges by engaging with its members and the community to develop practical and sustainable tools and services to ensure long-term access to digital content.
Quality Assurance (QA)	The process that ensures products meet established quality requirements, particularly in terms of content integrity
Representation Information	An OAIS term: the information that maps a data object into more meaningful concepts. It forms a substantial element of the technical metadata required to accurately render digital files.
Representation Information Registries	A managed store of representation information, such as the Global Digital Format Registry.
SCAPE project	SCAPE is an EU co-funded project (2011 – 2014) led by AIT to deliver large scale technical preservation solutions for digital collections. The British Library is a partner in this project.
‘Slow fire’ syndrome	A phrase used in library and archival circles to describe the embrittlement of paper resulting from acid decay.
SPRUCE project	SPRUCE (2012 – 2013) is a JISC funded community engagement project that supports and enables UK HE institutions to address digital preservation gaps. The Library is a partner in this project.
Technological Obsolescence	The state of being sufficiently technically out of date so as to impede access

	to digital content
Testbed	A platform for experimentation, particularly in this context with software and processes to support digital preservation

(References: DPC Digital Preservation Handbook; Society of American Archivists Glossary; University of Michigan Library glossary; Digital Curation Centre)