The LIFE² Project

Bringing digital preservation to LIFE

Lifecycle Information for E-literature

An Introduction to the second phase of the LIFE project

JISC   BRITISH LIBRARY   UCL   LIBER

THE LIFE PROJECT TEAM

Paul Ayris

Director of UCL Library Services, UCL

Richard Davies

LIFE[2] Project Manager, British Library

Rory McLeod

Digital Preservation Manager, British Library

Rui Miao

LIFE[2] Project Assistant, British Library

Helen Shenton

Head of Collection Care, British Library

Paul Wheatley

Digital Preservation Manager, British Library

GOVERNANCE

The Project is being governed by an international Project board. The full membership of the project board is as follows:

Sheila Anderson

Director, Centre for e-Research (CeRch)

Dr Paul Ayris (Chair)

Director of Library Services, UCL

Sayeed Choudhury

Associate Director for Library Digital Programs, The Johns Hopkins University

Richard Davies

LIFE[2] Project Manager, British Library

Rory Mcleod

Digital Preservation Manager, British Library

Helen Shenton

Head of Collection Care, British Library

Paul Wheatley

Digital Preservation Manager, British Library

ACKNOWLEDGEMENTS

Executive summary

Introduction

The first phase of LIFE (Lifecycle Information For E-Literature) made a major contribution to understanding the long-term costs of digital preservation; an essential step in helping institutions plan for the future. The LIFE work models the digital lifecycle and calculates the costs of preserving digital information for future years. Organisations can apply this process in order to understand costs and plan effectively for the preservation of their digital collections

The second phase of the LIFE Project, LIFE[2], has refined the LIFE Model adding three new exemplar Case Studies to further build upon LIFE[1]. LIFE[2] is an 18-month JISC-funded project between UCL (University College London) and The British Library (BL), supported by the LIBER Access and Preservation Divisions. LIFE[1] was completed in April 2006. LIFE[2] started in March 2007, and was completed in August 2008.

This summary aims to give an overview of the LIFE Project, summarising some of the key outputs.

There are four main areas discussed:

1 **From LIFE[1] to LIFE[2]** outlines some of the key findings from the first phase of the project as well as summarising the motivation behind this second phase.
2 **The LIFE Model** describes the current version of the model (version 2) which has been thoroughly updated from the first phase.
3 **LIFE[2] Case Studies** describes the three new Case Studies for LIFE[2]. It does not include the results from the Case Studies (these are available in the overall LIFE[2] Report), but offers some background on each of the studies as well as discussion of why they were chosen.
4 **Findings and Conclusions** outlines all of the findings and outputs from the entire project.

Further Information

On the inside of the back cover of this summary, there is a full listing of the project outcomes from both phases of the project. All project documentation, including Case Study results and spreadsheets with exact costings, are available from the LIFE website.

After each section in this document, there is a selection of links to further information. For example the box below contains links to the main project partners and project funder.

There is also a project blog (with RSS feed) which highlights any new project findings or documentation being made available.

USEFUL LINKS	
Digital Preservation at The British Library	www.bl.uk/dp
JISC	www.jisc.ac.uk
LIFE Project Website	www.life.ac.uk
LIFE Project Blog	www.life.ac.uk/blog
UCL Library Services	www.ucl.ac.uk/library

From LIFE[1] to LIFE[2]

What follows is a brief summary of the first phase of the LIFE Project (LIFE[1]) and the motivation for the second phase of the project (LIFE[2]). All documentation referred to is available from the LIFE website (**www.life.ac.uk**).

LIFE[1] Summary

Run from 2005 to 2006, the LIFE[1] Project made a major contribution to understanding the long-term costs of digital preservation. The project team felt that this was an essential first step in helping institutions plan for the future of digital collections.

Based on a comprehensive review of existing lifecycle models and digital preservation, the LIFE[1] Project developed a lifecycle-based methodology to calculate the costs of preserving digital information for the next 5, 10 or 100 years.

The LIFE Model broke down a digital object's lifecycle into six main lifecycle stages, identifyng the costs of these elements over a specific time period, and thus providing a complete lifecycle cost.

→ A full breakdown of the lifecycle categories and elements, as well as analysis of each element is provided in the LIFE[1] Project final Report (Section 4, p.9-16)

Generic Preservation Model

Due to the lack of work undettaken in the area of digital preservation costing before 2005, LIFE[1] also produced the Generic Preservation Model to further develop the Preservation stage of the model. This work allowed institutions to start to identify and reduce the spikes of cost, as well as the frequency of their preservation actions.

In the Generic Preservation Model, key elements of preservation activities were identified and the factors which contributed to their costs were modelled. A spreadsheet tool for calculating the costs for digital objects of varying file formats was also developed as part of the model.

→ A detailed introduction on the Generic Preservation Model (GPM) can be found in the LIFE[1] final Report (Section 8, p.90-107). The GPM spreadsheet is also available from the LIFE website.

Case Studies and Findings

To test and evaluate the LIFE methodology, three Case Studies were chosen: Web Archiving, Voluntarily Deposited Electronic Publications (VDEP) at the British Library, and E-Journals at UCL. By using these Case Studies, which were vastly different in both content and workflow, key costs were identified for each element in the lifecycle, enabling the project to estimate the costs for a single title, item or instance over a given time period.

Web Archiving

This Case Study considered the costs of the British Library's web archiving activities, which selected and archives around 1000 web site instances each year.

→ The full Web Archiving Case Study can be found in the LIFE[1] final Report (Section 6, p. 52-63).

E-Journals

The e-journals Case Study was based at UCL Library Services. At the time of the Case Study, 8668 e-journal titles were logged in a UCL Access database.

→ The full e-Journal Case Study can be found from the LIFE[1] Project final Report (Section 7, p. 64-89).

VDEP

Voluntarily Deposited Electronic Publications (VDEP) housed at the BL provided the final Case Study and involved the analysis of over 230,000 files.

→ The full Report of VDEP Case Study Report can be found from the LIFE[1] final Report (Section 5, p.17-51)

The three Case Studies proved to be highly effective in highlighting both the types of issues that can be encountered in a digital collection, and the ways in which a lifecycle methodology can be utilised to capture and apply a cost to solving these problems.

→ More detailed practical and strategic findings for each of the Case Studies can be found from the LIFE[1] Project final Report (Section 9, p.108-113)

LIFE[2]

After completion of the LIFE[1] deliverables (i.e. developing and testing the initial LIFE Model), it became clear that the model and LIFE approach needed to be further tested, and expanded through a wider range of Case Studies.

One of the key deliverables for LIFE[2] is to make the LIFE Model and findings more accessible to those institutions wishing to either adopt the model, or make use of the findings. Essentially, to answer the question – how is the LIFE work useful for our own collections?

The LIFE[1] Case Studies comprised born-digital collections, so a key area of expansion for LIFE[2] was the examination of non-born digital material (The British Library Newspaper Collection Case Study). This Case Study allowed for the comparison of analogue and digital lifecycles and costs.
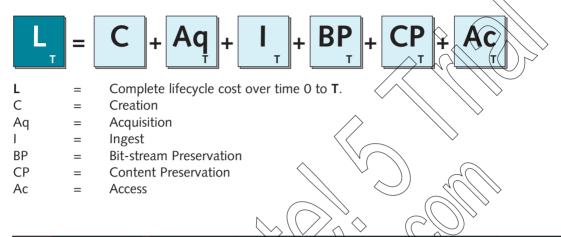
Institutional Repositories have also been addressed in two Case Studies (SHERPA-LEAP and SHERPA-DP). The costs of three Institutional Repositories were modelled to the LIFE work (SHERPA-LEAP Case Study), and the digital preservation services were examined through the SHERPA-DP Case Study.

LIFE^2 Model (v2)

The LIFE Model provides a view into the typical processes applied to digital objects throughout their lifecycle, by an organisation acting as the custodian of those objects. The processes are loosely organised in a chronological order, from their creation through to eventual access. It should be noted however that processes can, in practice, overlap with each other or be executed in a different order. The model aims to capture common processes found in most digital lifecycles. While some processes may not be applicable to all lifecycles, the intention is to provide meaningful placeholders for the majority of typical lifecycle processes.

$$L_T = C_T + Aq_T + I_T + BP_T + CP_T + Ac_T$$

L	=	Complete lifecycle cost over time 0 to **T**.
C	=	Creation
Aq	=	Acquisition
I	=	Ingest
BP	=	Bit-stream Preservation
CP	=	Content Preservation
Ac	=	Access

Lifecycle Stage	Creation or Purchase[1]	Acquisition	Ingest	Bit-stream Preservation	Content Preservation	Access
	. . .	Selection	Quality Assurance	Repository Administration	Preservation Watch	Access Provision
	. . .	Submission Agreement	Metadata	Storage Provision	Preservation Planning	Access Control
Lifecycle Elements	. . .	IPR & Licensing	Deposit	Refreshment	Preservation Action	User Support
	. . .	Ordering & Invoicing	Holdings Update	Backup	Re-ingest	
	. . .	Obtaining	Reference Linking	Inspection	Disposal	
	. . .	Check-in				

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1 This stage may be beyond the scope of some costing activities. Creation may occur outside the view of the costing institution. It should therefore be considered to be optional. Where considered within scope, elements will need to be tailored to the specific lifecycle case in question.

Stages represent high level processes within the lifecycle which group related lifecycle processes together. Elements represent the next level down in the analysis of lifecycle processes. They are still relatively high level and but are focused on a distinct process within the lifecycle. The LIFE Model attempts to describe a standard set of elements to which most digital lifecycles can easily be mapped. Sub-elements represent the specific components of a lifecycle element. At this level of detail, lifecycles are expected to vary considerably from one to another and so the detailed sub-elements that are provided in the full Model documentation are for guidance only.

The breakdown of components within the LIFE Model:

Lifecycle Level	Explanation
Lifecycle	The process from creation to access to preservation for a particular digital object, which can be broken down further into a number of distinct processes.
Lifecycle Stage	A high level process within a lifecycle. Provides a way of grouping related lifecycle elements. Processes within a Lifecycle Stage typically occur or recur at the same point in time.
Lifecycle Element	A distinct and significant lifecycle process that will provide useful costing information for organisations to support planning, evaluative or comparative exercises.
Lifecycle Sub-element	A suggested key component of a Lifecycle Element. Not significant enough to warrant inclusion as a distinct Lifecycle Element.

A full explanation and analysis of the model is available in the LIFE[2] Project Report from the LIFE Website.

Case Studies background

As with LIFE[1], the Case Studies form the basis of the LIFE[2] Project. Three Case Studies were chosen to help refine and review the Lifecycle Model developed in LIFE[1], as well as to expand the testing of the Model to new areas.

The three Case Studies chosen for LIFE[2] were:

- SHERPA-LEAP – Institutional repositories in the federal University of London
- SHERPA-DP – Distributed repository environment for digital preservation of content
- British Library Newspapers – Digitisation as surrogacy

It should also be noted that the LIFE Model used for the Case Studies was an previous working version of the Model (v1.1). As a result of the feedback from a range of sources (including the Case Studies) this version was then updated to the LIFE Model v2 which was outlined in the previous section.

Wishing to provide a tool that can be used throughout UK, and globally, to cost the lifecycle and long-term digital curation of deposited research outputs, LIFE[2] developed a range of costing studies to complement the outputs of the Case Studies in LIFE[1], based on repository development, using the SHERPA-LEAP and SHERPA-DP Projects as testbeds for identifying lifecycle costs and the costs of digital preservation in these areas.

SHERPA-DP Case Study

The Centre for e-Research (CeRch) at King's College London was established following the demise on 31 March 2008 of the Arts and Humanities Data Service (AHDS). AHDS was funded to provide a national service of digital curation and preservation for arts and humanities collections. It is also possible to envisage that the new service could provide a shared preservation environment for several universities' institutional repositories, following the outcomes of the SHERPA-DP Project. SHERPA-DP posits a preservation layer on top of repository curation, sharing AHDS's expertise in preservation planning and activities across multiple institutional repositories.

The SHERPA-DP Case Study is used to test the implementation of the LIFE Model in an explicit context of digital preservation, and to consider the broader external factors affecting preservation costs. AHDS undertook digital preservation for more than a decade, with all collections ingested and managed in explicit conformance with the OAIS model, enabling the Case Study to show costs relating to preservation when conducted as a third-party, or outsourced, service for IRs, and to compare them with the preservation costs for in-house preservation.

The LIFE Project developed the lifecycle costing methodology that focused specifically on the cost implications of the preservation workflow and the content that was being preserved. However, as explored in the Generic LIFE Preservation Model, there is a range of external influences that have the potential to change the Lifecycle Model significantly and to reduce costs. The SHERPA-DP Case Study also considered the implications of digital lifecycle elements being undertaken by different institutions, and the significant potential of these centralised and distributed processes for cost savings.

SHERPA-LEAP Case Study

SHERPA-LEAP (a partner in the UK SHERPA consortium) is a University of London consortium, led by UCL, which has helped to create open access institutional Eprints repositories at 13 University of London institutions.

Three institutional repositories were chosen for the Case Study, to represent a range of material:
- Goldsmiths, University of London – contains examples of research output from the visual and performing arts.

- Royal Holloway, University of London – contains a range of text-based materials (mostly journal and conference papers).
- UCL – contains mostly text-based objects (journal and conference papers, and book chapters); only a few audio/visual objects are currently held.

British Library Newspapers Case Study

In LIFE[2], a key expansion of the LIFE[1] work is to examine whether the LIFE Model could be used to capture the costs of both analogue and digital lifecycles, and if possible, to compare the costs of both lifecycles at the same stages of the LIFE Model. The comparisons between analogue and digital lifecycles are crucial to making future collection management decisions. For example, when faced with the decision to acquire an analogue or digital version of the same object, which one provides the better solution in terms of cost and sustainability?

To help identify solutions for this question, this Case Study used the LIFE Model to provide:
1. A direct cost comparison between paper and digital formats.
2. A possible method of supporting decision making to help libraries decide what to keep when space or cost is a concern.

Two British Library Newspaper Collections were used to track the applicability of the LIFE Model and to compare the lifecycles of digital and analogue collections.

- **Burney Digital Collection**
  The Burney collection is a collection of Newspapers purchased from the Reverend Dr. Charles Burney in 1818 for £18,500. It comprises over 1,100 volumes of the earliest-known newspapers from the 17th and 18th centuries. In order to preserve this rare collection, the Burney collection was microfilmed in the 1970's and then digitised, generating close to 1,000,000 pages of text. This content forms the Burney Digital Collection.

- **Legal Deposit Newspaper Collection**
  The British Library receives a copy of every national newspaper daily, and the majority of regional daily and weekly newspapers, under legal deposit legislation. 133,000 issues arrive every year, and the costs for one year's curation of the collection are used for the analogue part of this Case Study.

USEFUL LINKS	
Full LIFE[2] Case Study Reports	www.life.ac.uk/2/documentation.shtml
AHDS	www.ahds.ac.uk
Burney Newspaper Collection	www.bl.uk/collections/burney.html
Newspapers at The British Library	www.bl.uk/collections/newspapers.html
OAIS Model	www.dcc.ac.uk/resource/curation-manual/chapters/oais-model
SHERPA	www.sherpa.ac.uk
SHERPA-DP	www.sherpadp.org.uk
SHERPA-LEAP	www.sherpa-leap.ac.uk/

LINKS TO INSTITUTIONAL REPOSITORIES	
Goldsmiths Research Online	http://eprints.goldsmiths.ac.uk
Royal Holloway Research Online	http://eprints.rhul.ac.uk
UCL EPrints Repository	http://eprints.ucl.ac.uk

Findings and Conclusions

This section outlines the overall findings and conclusions from the project as discussed throughout the overall LIFE[2] Project Report. There are also a number of supporting documents in the form of reports, Case Study costing spreadsheets and workflows. As with all LIFE[2] documentation, these are all available from the LIFE website (**www.life.ac.uk**).

It is also worth clarifying the costs given. It can be misleading to take the costing in the spreadsheets as absolute. For example, for certain Case Studies the costings should be regarded as illustrative rather than absolute. For reference, the spreadsheets do give exact costing calculations with no alterations to the figures. However, the per-entity cost tables in this summary use figures that are rounded up by at least one significant figure.

Economic Evaluation of LIFE

When the first phase of LIFE was completed, one of the key elements that the team wanted to work on for LIFE[2] was a review of the economic approach used. Professor Bo-Christer Björk from Hanken, the Swedish School of Economics and Business Administration, was brought on board to complete a full independent review to the LIFE approach.

The report largely validated the approach taken by the LIFE team. At the same time, it provided a number of recommendations to steer the second phase of the project in the right direction on key economic issues such as the use of discounting, the role of inflation and costs outside of the lifecycle. The review recommended that all calculations were done using real-term, inflation-adjusted costs. It also recommended that no discounting should be applied. The recommendations are summarised in the main LIFE[2] Report in Section 4.3 (page 39), and the full independent review is available from the LIFE Website

SHERPA-DP Case Study

The results for SHERPA-DP are broken down into the lifecycles costs per entity for Year 1 below.

SHERPA-DP Lifecycle Costs Per Entity (Year 1)

Stage	C	Aq	i	M	BP	CP	Ac	Total
Cost	£0.00	£11.40	£0.10	£0.00	£3.00	£2.00	£1.80	£18.40

The key finding for this Case Study was that the costs did not vary greatly for differing quantities, as a largely-automated process has been established. There were 6,526 objects harvested as part of the process for SHERPA DP, giving the overall costs highlighted below.

Summary of Total Costs from SHERPA-DP Case Study

	Total Cost	Cost Per Object	Annual Cost per Object
Year 1	£119,801	£18.40	£18.30
Years 1–5	£317,711	£48.70	£9.70
Years 1–10	£530,515	£81.30	£8.10

There were no costs for Creation or Purchase. Acquisition costs were mostly for the development of the OAI-PMH tool and for integrating the harvester with the AHDS repository. Ingest costs were low, since quality assurance was the responsibility of the source repositories: scheduled harvesting using OAI-PMH led to file format characterisation being automated using DROID.

The largest cost area was in Bit-stream Preservation, since this included staff elements for system administration and technology monitoring, as well as for storage provision.

As with the other Case Studies, Preservation Action was a particularly hard part of Content Preservation to cost, while Preservation Planning and Technology Watch are more consistent across time.

SHERPA-LEAP Case Study

The Year 1 costs per object are summarised below:

Repository Lifecycle Costs Per Entity (Year 1)

Stages	C	Aq	I	M	BP	CP	Ac	Total
Goldsmiths	£3.20	£4.40	£16.80	£1.80	£0.30	£3.20	£0.90	£30.60
Royal Holloway	£0.00	£10.90	£4.10	£6.00	£1.20	£0.70	£1.20	£24.10
UCL	£0.00	£2.30	£6.90	£5.50	£0.10	£0.00	£1.20	£16.00

Overall Repository Operational Conclusions

The variations in costings between the institutions in the LEAP Case Study may be attributed to three factors. First, the caveats already listed above should be noted. Second, the narratives show staff on different grades, in differing proportions, working in the repositories. This naturally affects the costings. As the repositories become more stable, staff gradings and roles are likely to become regularised, and comparison across the HE community will become more informative. Third, the studies show that the fact that Goldsmiths handles a range of complex digital materials within its institutional repository structure increases the average handling cost per object.

As with SHERPA-DP, after year 1, the main lifecycle costs are those associated with preservation. For SHERPA-LEAP, Bit-stream Preservation costs are based on estimates, both of repository growth and in the technology marketplace. Content preservation will clearly bring costs for the partners in the future, but for the time being those costs are not easily predictable.

This is something that perhaps the Generic Preservation Model can help to answer once it has been further developed and tested. These differences across both the SHRERPA-LEAP repositories and the other Case Studies leads to questions as to whether or not LIFE can yet be used for inter-institutional comparison when the collections themselves are so variable. This is one of the reasons why the context of the Case Studies is so important, and it is critical not simply to take the lifecycle costs at face value.

There is also the question of time and resources taken up to identify these costs in the first place. Each of these Case Studies needed considerable time spent on them, both internally within the institutions in question and externally by the LIFE Team. It would be fair to say that each of the Case Studies took a much longer timeframe to develop that originally anticipated. This should not be underestimated by other institutions thinking of performing similar costing studies.

For each of the Case Studies the effort was certainly worthwhile, allowing the institutions to gain a greater understanding of their own costs and processes. As noted by the CeRch team in the SHERPA DP Case Study, it certainly helps to have a business requirement for determining costs, but applying the LIFE model to different institutional settings is recommended to all with an interest in digital curation and preservation.

Overall Repository Strategic Conclusions

→ The SHERPA-DP Case Study shows that a 3rd-party preservation solution is possible for digital repositories in the UK

→ As an automated service, SHERPA DP could offer significant cost savings when increased quantities of digital objects are processed

→ For SHERPA-DP, the largest cost area was in Bit-stream Preservation, since this included staff elements for system administration and technology monitoring, as well as provision for storage (including equipment renewal) and offsite duplicate storage

→ The variation in costings identified in the SHERPA-LEAP case studies reveals that the rollout of institutional repositories in the UK is still in its infancy

→ The costing figures prepared by the SHERPA-LEAP partners are not yet robust enough for definitive conclusions to be drawn; it would be too simplistic to make comparisons between institutional costs at this stage

→ Digital preservation is yet to become embedded as a concept in the Higher Education community. This presents a major challenge in advocacy for the global digital preservation community

→ In the SHERPA-LEAP Case Studies, it is suggested that after year 1 the main lifecycle costs are those associated with preservation. However, Bit-stream Preservation costs are based on estimates, both of repository growth and in the technology marketplace. Content Preservation will clearly bring costs for the partners in the future, but for the time being those costs are not easily predictable.

→ The Goldsmiths Case Study suggests that higher costs may currently be associated with managing complex digital materials at an institutional level.

British Library Newspapers Case Study

The key finding for this Case Study is that the LIFE Model has been an effective tool in enabling the evaluation and comparison of analogue and digital lifecycle costs. Certainly as a result of the Case Study, the team now has comparable costs for analogue and digital newspaper collections. However, it should be noted that the costs should not be taken out of context. When comparing analogue and digital lifecycles, each collection needs to be evaluated in its own right.

Total per entity cost excluding Creation cost (Year 1)

Stages	C	Aq	I	M	BP	CP	Ac	Total
Digital		£1.20	£0.90	£0.20	£0.30	£0.10	£0.40	£3.10
Analogue		£1.20	£1.50	£0.30	£0.90	£0.30	£0.40	£4.60

Total per entity cost excluding Creation cost (5 Year Total)

Stages	C	Aq	I	M	BP	CP	Ac	Total
Digital		£1.20	£1.03	£0.23	£0.18	£0.10	£0.38	£3.14
Analogue		£1.18	£1.70	£0.27	£0.66	£0.34	£0.40	£4.56

Conclusions for Digital and Analogue Comparisons

The LIFE Model and associated methodology provided a useful way of comparing analogue and digital lifecycles. The resulting figures were considered to be a useful indication, if not an exact representation and comparison, of analogue and digital costs. Other key conclusions include:

→ Comparison between analogue and digital lifecycles is complex and requires a great deal of effort, both to develop useful mappings and to generate accurate costs

→ Analysing activity retrospectively was challenging. Costing activity as it occurs would be expected to be considerably more straightforward

→ The application of the Model to an analogue lifecycle was workable, and the digital terminology used was understandable, and in most cases appropriate, for staff working with analogue collections

→ A clear methodology and the use of workflow diagrams to illustrate complex processes considerably assisted the execution of the Case Study

→ A number of the raw LIFE Stage costs calculated were surprisingly similar between the analogue and the digital lifecycles. Ingest and Bit Stream Preservation / Book Storage Provision were considerably higher for the analogue lifecycle

→ When creation costs are not taken into account (where a like with like comparison is not possible) the digital lifecycle was found to be marginally cheaper than an analogue lifecycle

→ The analogue lifecycles which were examined are well-established and particularly efficient, but the digital lifecycles are relatively new and will see considerable streamlining and automation in the near future. Nonetheless, it appears that digital costs will before long be considerably lower than analogue costs. Trends in digitisation and wider lifecycle costs associated with newspaper content are discussed in Section 1.

LIFE^2 Project Outputs

Each of the following key project outputs are presented with links to where further discussion takes place in the overall LIFE^2 Project Report.

→ The **LIFE Methodology** gives an outline of the methodology used throughout the project and outlines how to use LIFE and get the most out of both the Model and the Case Study results.
- See: Sections 2.7 (page 7) and 2.8 (page 12)

→ **Aims of Digital Preservation Costing** highlights some of the different approaches that an organisation can take to costing activities and how the LIFE approach fits in with these options.
- See: Section 3.3 (page 15)

→ **LIFE Model v1.1** is a working version of the LIFE Model used for the LIFE^2 Case Studies in order to gain feedback on the direction which the model should take. This version was used as a basis for the final model update (v2).

→ **LIFE Model v2** outlines a fully-revised lifecycle model taking into account feedback from user groups, the Case Studies and the wider digital preservation community.
- See: Section 3.4 (page 17)

→ **Generic Preservation Model (GPM)** summarises the update to the preservation model with an accompanying spreadsheet. This model allows institutions to estimate potential digital preservation costs for their collections. The GPM fits into the updated LIFE Model.
- See: Section 3.5 (page 34)

→ **An Economic Evaluation of LIFE** outlines the report written by economist Bo-Christer Björk on the approach used for both the first and second phases of LIFE. This independent review validates the LIFE approach for lifecycle costing.
- See: Section 3.2 (page 14)

→ **SHERPA DP Case Study** outlines the mapping of the repository services that CeRch provides to the LIFE Model.
- See: Section 4.3 (page 39)

→ The **SHERPA-LEAP Case Study** maps three very different HE repositories to the LIFE Model. Goldsmiths University of London, Royal Holloway University of London and UCL (University College London) each provide exemplars of varying collections. Each institution's repository is at a different stage of development.
- See: Section 4.4 (page 54)

→ The **Newspapers Case Study** successfully maps both analogue and digital newspaper collections to the LIFE Model. This success means that LIFE could be developed into a fully-compatible predictive tool across both analogue and digital collections, allowing for comparison both throughout the lifecycles of a collection and across different types of collections.
- See: Section 1 (page 75)

Overall LIFE Project Documentation

All project documentation and deliverables from both LIFE[1] and LIFE[2] are available on the LIFE website: **www.life.ac.uk**

LIFE[1] DOCUMENTATION

LIFE[1] Project Summary
A short Report providing an overview of the Project's results and findings.

Research Review
A detailed literature review that describes the background to the Project, and the selection and development of the methodology and lifecycle approach.

LIFE[1] Project Final Report and Spreadsheets
The Report describes the Project's approach, methodology and findings in developing lifecycle techniques to identify and cost the preservation of digital materials. Cost estimations for preservation activity for both the VDEP and Web Archiving Case Studies are also available.

LIFE[2] DOCUMENTATION

Economic Evaluation of LIFE[1] and LIFE[2]
An independent Report evaluating the approach used in LIFE[1] as well as the intended approach for LIFE[2].

LIFE[2] Model Update – version 1.1
The working model update used during LIFE[2]. This version of the model was updated to produce the final LIFE[2] Model v2 which is included in the final Report.

Project Summary for the LIFE[2] Project Conference
A short Report providing an overview of activities in the project's second phase up until the Project Conference in June 2008. This summary is an updated version of that summary.

LIFE[2] Project Final Report
The Report describes the Project's approach, methodology and findings, which are linked to from the project outputs page.

Case Study Spreadsheets
Spreadsheets providing detailed lifecycle costing activity for each of the Case Studies.

Workflows
Workflows for the British Library Newspapers Case Study and for SHERPA-DP.

Project Papers and Presentations
All journal and conference papers produced for the Project, as well as any other Project presentations.