Business Planning for Digital Libraries

International Approaches

Mel Collier (ed.)

LEUVEN UNIVERSITY PRESS

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About the authors

Ian **Anderson** is Senior Lecturer in New Technologies for the Humanities at the University of Glasgow, Scotland, and member of the Humanities Advanced Technology and Information Institute (HATII). He conducts research on web services for digital libraries, the archive and feminist theory, the interrelationships between identity, memory, writing and history, retention and deletion decision making in lay record managers and self-preserving digital objects.

Lluís **Anglada** is director of the Catalan Academic Library Consortium and was formerly the library director of the Catalonia Technical University and professor for three years in the School of Librarianship of Barcelona University. He is active in various professional associations at Catalan, Spanish and international levels, including the scientific committees of professional conferences in Catalonia and Spain, European meetings of ICOLC and Library Advisory Boards of Academic Press, Blackwell Publishing, Nature Publishing Group and Springer.

Ángel **Borrego** is a lecturer in the Department of Library and Information Science at the University of Barcelona, teaching an undergraduate course in information behaviour, and co-ordinating the School's doctoral programme. His current research interests focus on scholarly communication and information behaviour in the electronic environment.

Genevieve **Clavel-Merrin** is responsible for national and international cooperation at the Swiss National Library in Bern. She is currently working on projects covering digitization and its coordination in Swiss libraries, plus public-private partnerships. She is active in the field of multilingual access (MACS - Multilingual Access to Subjects) and IFLA. She has wide experience in European-funded projects and is the Swiss representative for The European Library.

Mel **Collier** is Chief Librarian at the University of Leuven and a consultant in the fields of change management and innovation in libraries and learning in institutions of higher education. For the last ten years he has worked on business planning for digital libraries, including The European Library and Europeana.

Núria **Comellas** is Project Manager at the Consortium of Academic Libraries of Catalonia responsible for negotiating and the licensing of electronic resources on behalf of the consortium library members and the division of costs between them. She was formerly a librarian at Universitat Oberta de Catalunya and at Universitat Politècnica de Catalunya.

Stefan **Gradmann** is Professor of Library and Information Science with a focus on knowledge management and semantics based operations at the Humboldt University of Berlin. He studied Greek, philosophy and German literature in Paris and Freiburg (Brsg.) and received his Ph.D in Freiburg in 1986 in Literary Studies. He has worked as scientific librarian at the State and University Library in Hamburg, he was the director of the GBV Library Network, and worked for Pica B.V. in Leiden as product manager and senior consultant. Later he was Deputy Director of the University of Hamburg Regional Computing Center, the Project Director of the GAP (German Academic Publishing)

Project of the German Research Association, and technical co-ordinator of the EC funded project FIGARO. He is currently heavily involved in building Europeana, the European Digital Library, specifically as co-leader of WP3 on technical and semantic interoperability and leader of EuropeanaConnect WP1 (Semantic Data Layer).

Rolf **Hapel** is director of Citizens' Services and Libraries in Aarhus, Denmark, and currently member of the coordination board for net libraries. He was awarded the order of Dannebrog and is an honorary professor at the Danish Library School. Aarhus Public Libraries received the Gates Foundation's "Access to Learning Award" 2004, was among the top ranked public institutions in Innovation Cup 2007 and is frequently top benchmarked in "Best on the Internet".

Kristiina **Hormia-Poutanen** is the Deputy National Librarian of the National Library of Finland and director of the Library Network Services department. She is a member of the LIBER board and chair of the LIBER Digitization and Resource Discovery section. She is the chair of the availability section of the Finnish Digital Library project. She is active in various national and international initiatives, including IFLA, ICOLC, LIBER and eIFL especially in relation to digital library infrastructures, consortia development issues, licensing and licensing models and open access.

Dirk **Kinnaes** is Project Manager with LIBIS, the ICT department of Leuven University Library, which also provides ICT services to a large number of external library and archive clients through LIBISnet. He is a key participant in the development and implementation of LIAS, the Leuven Integrated Archive System.

Paul **Koerbin** is the Manager of Web Archiving at the National Library of Australia with responsibilities for the PANDORA Archive and the Library's web domain harvesting programme.

Derek **Law** was Head of the Information Resources Directorate and University Librarian of Strathclyde University, Glasgow from 1999 until October 2008. He holds a chair in the Department of Computing and Information Science and is a member of the Centre for Digital Library Research. He has written extensively on the development of digital libraries, on the role of information in e-learning, on digital information systems and has a subsidiary interest in naval history.

Gary S. **Lawrence** retired from the position of Director of Systemwide Library Planning for the University of California system in June 2008.

Chern Li **Liew** is a Senior Lecturer in the School of Information Management at Victoria University of Wellington. She holds a PhD in Information Studies from Nanyang Technological University (Singapore), and an MSc from Loughborough University. She has published in the areas of digital libraries, digital cultural heritage, user studies and knowledge organization.

Angelika **Menne-Haritz** is Director of the 'Archives of Parties and Mass Organisations of the former GDR' foundation in the Federal Archives in Berlin. She has extensive experience as an archival educator and teacher in administrative sciences. She received a PhD in literature and history, then undertook her archival training at the Archivschule Marburg and worked in the state archives of Berlin and of Schleswig-Holstein, before becoming director of the Archivschule Marburg. She passed her qualification for professorship (habilitation) at the German University of Administrative Sciences Speyer with a thesis on 'Business Processes'.

Paula **Mikkonen** is a licensing coordinator at the FinELib Consortium service unit of the Library Network Services department of the National Library of Finland. The service unit negotiates licence agreements of e-resources for the use of the FinELib Consortium member organizations.

Marc **Nelissen** is an Archivist in the University Archive and Art Patrimonium department of Leuven University Library. He is a key participant in the development and implementation of LIAS, the Leuven Integrated Archive System.

Michael **Popham** is Head of Oxford Digital Library, a core service of Oxford University. He is also the director of Electronic Ephemera, a project funded by JISC to digitize selections from the John Johnson collection.

David C. **Prosser** was appointed the founding Director of SPARC Europe in 2002, following a career as a scholarly publisher for Elsevier Science and Oxford University Press. In December 2009 it was announced that he has been appointed as Executive Director of Research Libraries UK, a consortium of 29 of the largest research organizations in the UK, including the three national libraries.

Wouter **Schallier** is since 2008 the Executive Director of LIBER (Association of European Research Libraries), based in The Hague, Netherlands. He was the Librarian of the Biomedical Library of Leuven University from 2005 until 2008.

Luc **Schokkaert** is Head of Public Services and IT at KADOC, the documentation and research centre for religion, culture and society, based at Leuven University. He is a key participant in the development and implementation of LIAS, the Leuven Integrated Archive System.

Barbara **Sierman** is Digital Preservation Manager at the Koninklijke Bibliotheek, the national library of the Netherlands in The Hague. She started her career at Pica (now OCLC) as a library consultant and, after various jobs in IT, she joined the KB in 2005.

Alma **Swan** is the joint proprietor of Key Perspectives Ltd., founded in 1996. After research at Southampton University and a lectureship at Leicester University she became managing editor of an Elsevier Science biomedical research indexing service. She is a Visiting Researcher in the School of Electronics & Computer Science at the University of Southampton, Associate Fellow in the Marketing and Strategic Management Group at Warwick Business School and editor of The Euroscientist.

Hilde **Van Kiel** is Head of the central University Library Services of the University Library of Leuven and coordinator of e-resources. She obtained a master's degree in history from K.U.Leuven and previously worked as a librarian and network administrator for KPMG Tiberghien & Co.

Harry **Verwayen** is Business Development Director at Europeana in The Hague and formerly worked at the think-tank Knowledgeland in Amsterdam. His specializes on business model innovation in the public sector, the use of visual thinking in problem solving and innovation in the cultural heritage sector.

Hazel **Woodward** has been University Librarian and Director of the University Press at Cranfield University (UK) for over nine years. Her research interests include electronic publishing and scholarly communication (the subject of her PhD thesis) and she has published many papers in the professional literature on digital library issues. She is very active professionally, being currently the Chair of the JISC E-Books Working Group and a member of the JISC Journal Working Group.

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BUSINESS PLANNING FOR E-ARCHIVES

Dirk Kinnaes, Marc Nelissen,
Luc Schokkaert and Mel Collier

Introduction

Although it is not uncommon for archives departments to be housed in libraries, archivists are keen to point out that the professional processes associated with archive management are different from those of library management. Archivists have a strict appraisal process for deciding what needs to be preserved and what not, and when an item is selected for retention a decision is being made about the period for which it will be retained, if not in perpetuity. The criteria for appraisal are not absolute: in the administrative context documents may be retained because they are statutorily required or they contain vital information about the organization. If being selected for perpetuity other factors come into play, such as their relationship to the mission of the organization or their historical importance. The method of appraisal and selection in our contemporary society, with its excessive production of documents, is crucial for the efficiency and the feasibility of the archive. The archivist could retain or destroy on the basis of document type (for instance bank statements could be destroyed when they are no longer needed for audit purposes) or on the basis of function (for instance policy documents could be retained which are essential for the ongoing operation of the organization or for historical purposes).

The process of appraisal and selection should always be carried out in the full understanding of the document production of the creator of the archive as a whole. The archivist must become familiarized with the processes of the entity which formed the archive and the context in which it was formed. When items are selected for retention they are organized by the archivist within the retained archive in a way which reflects their position within the whole, as nearly as possible to the original order. This principle is carried through in the approach to metadata creation: the context in which an archive was formed and the relationship of the objects with each other within it must be reflected in the archival descriptions. This is of course rather different from normal library cataloguing.

Fundamentally there is no difference of principle in this regard between digital and non-digital archiving. The criteria and methods can be applied to both. In practice however, the scale of digital object production requires serious additional business planning measures. Paper archives are visible and (perhaps) rather less likely to be disposed of without thought, and they can be stored until the archivist has time to deal with them. If necessary an emergency operation can be launched to rescue them. With digital archives this is not so obvious. Furthermore the quantity of digital production makes the cost and organizational challenge of emergency intervention by the archivist much more problematic. Digital archiving makes business planning even more imperative

than analogue archiving and requires active participation by the archive creators. Pro-active planning can ensure that a certain level of pre-appraisal and selection can occur with essential metadata creation in a standardized way at the point of creation of the document, which will aid automatic transfer from the administrator or archive creator to the archivist when the time comes.

Business planning for e-archives

Despite the fact that the internal organization and professional procedures of archives may be different from those of other cultural sectors, the principles of business planning for e-archives have much in common with others because the principles and processes involved in repository management (see the chapter by Swan) are themselves common. A digital repository for an organization can of course serve its various sectors: administration, archive, library, heritage and museum functions and audio-visual archiving. Much of the literature and advice about e-archives is indeed based on the seminal work of the Trusted Repositories Audit and Certification taskforce which was initiated in 2003 by the Research Libraries Group and the National Archives and Records Administration in the USA, and then further developed by contributions from Europe (TRAC 2007). In the Netherlands a testing framework for digital archiving (ED3 2008), which was developed in reaction to a report concerned with the government “getting dementia”, (Een dementerende overheid 2005) is based to a large extent on the TRAC work. There are several sources of advice and support in the whole area of archiving and repositories, for instance Digital Preservation Europe¹ provides a wide range of services and support, including the planning tool PLATTER (2008). This structures its planning advice into:

- Business plan
- Acquisition
- Staffing
- Access
- Technical
- Data
- Succession
- Disaster
- Preservation

In Flanders the excellent Expertisecentrum DAVID (eDAVID)² provides a range of advice and services (in Dutch but with the very effective Google translation tool), including a document on the organizational aspects of building and managing a digital depot across all the cultural sectors (Schaule 2009).

Given the common ground between the sectors we restrict ourselves in the following sections to those aspects or nuances of business planning which seem peculiar to the archives sector.

¹ <http://www.digitalpreservationeurope.eu/>.

² <http://www.expertisecentrumdavid.be/>.

Vision and mission

The starting point for the vision and mission of an e-archive is likely to be focused on the needs of the organization to which it belongs. Most institutions, certainly universities, will wish also to provide services orientated towards external users, but the e-archive is likely to be set up primarily to provide the mother organization with its persistent memory. Persistent could imply preservation of and access to digital objects which will be kept in perpetuity or for a defined period. Examples of objects which would probably be kept in perpetuity are constitutional and policy documents, minutes of key decision making committees and boards, correspondence of key board members and executives, annual and financial reports and so on. Examples of items which might be kept for a given period could be records of financial transactions (kept for a statutory period for audit purposes) and personnel records (kept for a certain period after the person has left or died). This is all for the organization to decide, but in the digital age the decisions are rather more crucial in view of the volume of material and potential cost of archiving. The digital environment also brings new questions: what about archiving the rector's or chief executive's e-mails, for instance? With paper correspondence he or she may easily keep personal correspondence separate from official correspondence; in the digital environment this would need to be planned in advance with the creator of the files, as to sort it out retrospectively would require human intervention on a mammoth scale. Attitudes to digital archiving may differ between types of mother organization: a company might be inclined to take a strictly practical view of its needs, whereas a university, for instance, might well have a strong sense of its history in the making.

Process and procedures

Among the many documents available on the eDAVID site is a checklist on digital archiving for archivists (Boudrez n.d.). The checklist includes items under the following headings:

- Development of archiving policy
- Raising awareness of archive creators and IT staff
- Supervision of digital archiving
- Implementation of procedures
- Acquisition into the digital store
- Long-term physical retention of the bits and bytes
- Display and interpretation of the digital documents in the long term

Once material has been selected the process of inclusion in the e-archive can begin. It goes without saying that the e-archive should follow the principles of the reference model for an open archival information system (OAIS 2002), which is currently under review.³ Compliance with OAIS can be checked with the TRAC criteria. The Leuven Integrated Archive System (LIAS) (Kinnaes 2009) defines the following functions, based on OAIS:

- Pre-ingest: rudimentary selection and transformation from digital objects to submission information packages (SIPs), including the creation of digital objects from ana-

³ <http://cwe.ccsds.org/moims/default.aspx>.

- logue originals (if necessary), virus and bit control, the addition of metadata: technical (may be automatically generated), structural, administrative, rights, descriptive.
- Ingest: capture of the SIPs, quality control, generation of archival information packages (AIPs). It includes decisions about the nature of the objects and their relationship to each other (e.g. a file of correspondence); what metadata are available and whether they are compliant; which collections do objects belong to; which derived versions (manifestations) e.g. preservation, consultation versions, should be created; in what way should the objects be displayed to the user; should the objects be available to external search engines?
 - Preservation: choice of strategies and standards for migration and/or emulation. In principle a strategy is chosen for each document type, but there must at least be an archive copy in the original format, together with a consultation copy.
 - Storage: induction of AIPs into permanent mass store, backup and recovery, preparation of AIPs for consultation
 - Data (including metadata) management: adding, changing, deleting information. In the Leuven Integrated Archive System (LIAS) the components are: the library cataloguing system for books, journals and separately catalogued audio-visual documents, the archive management system for archive documents in context and the repository system itself for technical, structural, administrative and rights metadata, and an authority files system.
 - Administration: negotiation of the submission agreement, checking compliance of the SIPs, system configuration
 - Access: making the archived objects available to users. Definition and design of display environment, presentation via specific systems such as Aleph or ScopeArchiv OPACs (see below), search facilities, registration of users, reading room administration of original documents.

Infrastructure

While documents are still being used for administrative purposes and still in the dynamic phases of use, modification and re-use, it is conventional to talk of holding them in Electronic Document Management Systems (EDMS). When documents pass out of that stage, become static and of archival value they are transferred to Electronic Records Management Systems (ERMS) or archive management systems, where they should no longer be changed or deleted except in strictly documented and specified circumstances. As stated elsewhere in this book a digital archive can be organized on a large or a small scale and can cost a little or a lot. It can use Open Source software or commercial products. At Leuven, where there had been no previous archive management system in place, the requirement was for a solution which combined the acquisition of an institutional archive management system, linked to a repository which would be also be available for other applications such as digitized print, manuscripts, art objects and the Academic Bibliography (register and repository of academic output). There was a policy preference for choosing a commercially supported product in preference to in-house development on the basis of Open Source. Eventually the solution consisted of:

- Aleph (the existing Ex Libris library management system) for separately catalogued items

- ScopeArchiv for archive management
- Digitool (Ex Libris repository product)
- ODIS (Flemish research resource and database)⁴ for authority management
- Mass storage with security, backup and recovery (including distributed tandem operation for redundancy) provided by the University ICT services department

The first three are managed at application level by the University Library's ICT department, LIBIS, but all network and hardware management is outsourced to the University's central ICT services. Legacy systems on DSpace are also running. Implementation of the Ex Libris integrated search platform, Primo, is under consideration.

Value proposition, finance and sustainability

The value proposition of archives in many cases is likely to consist in the corporate memory and historical value of the archive to its owners and the public and the possibilities of exploiting them, and to the more prosaic imperative of the preservation of mission critical documents for policy or for audit reasons. The introductory chapter of this book and the chapter by Swan, as well as the report by Schaule (Schaule 2009), all provide similar summaries of possible sustainability models. As mentioned above, however, organizational archives mostly exist to serve the organization, and thus it is hard to see how they could be financed other than by the organization itself, or at least sources very close to the organization. Other public and government archives are seen as public property, created at public cost through the taxation system (see the chapter by Menne-Haritz), which should therefore continue to be financed through the public purse. It is always possible that a few highly notable archives will attract foundation funding or other sponsorship, but in the main there can be no substitute for the establishment of a secure budget line within the host organization, as recommended for digital libraries in general by Greenstein and Thorin (Greenstein 2002). This may be no easy matter, however, as the digital archive may well be a partly or wholly new budget line which is additional to existing analogue archive costs, and may not at first sight be able to be financed from savings elsewhere, even though arguments can be advanced that the digital archive can bring savings in storage and staff time.

The costing of e-archives has similar considerations to that of other digital libraries, and indeed information systems in general. Special consideration must be given to long-term preservation, however, as, although the term digital archiving can imply fixed term retention, it implies in the main preservation in perpetuity. As stated in the chapter by Sierman, the costs of long-term retention are difficult to predict because, although costs of storage media are likely to continue to reduce, the future of the archive may be one of endless growth, and the nature, scale and difficulty of future preservation activities are by definition unknown. Other costs are however reasonably amenable to estimation. At Leuven the following are taken into account:

- Staff costs (including overheads) directly associated with the development, operation, maintenance and management of the digital archive

⁴ <http://www.odis.be/eng/opc/databank.htm>.

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- The purchase, licensing and maintenance of the archive management system
- The purchase, licensing and maintenance of the repository system
- The purchase and maintenance of hardware directly associated with the archive
- The outsourcing of hardware operations including an all-in charge for secure mass storage to the University's ICT Services department

Costs which are not taken into account include networking (covered centrally), the costs of archive or library personnel associated with development and operations, the costs of the original administrators or creators of the archive who need to prepare it for transfer to the archivist and the costs of management and senior academic personnel involved in the steering committee.

Leuven University has a distributed budget model whereby faculties, faculty groups and service departments have considerable budgetary autonomy and are charged for services. The costs mentioned above are all brought together with an element for future system replacement and then charged to client groups participating in use of the repository on the basis of a one-off entry fee plus a banded fee per package of mass storage used per annum.

Staffing

Digital archiving is a relatively new field, even within the young field of digital libraries, and the recruitment and retention of experienced and competent staff is a major challenge, as indeed it is for the digital library field as a whole (see the chapter by Popham). This is exacerbated by the fact that even archive management systems themselves are not yet as well established as library management systems. The pool of experienced personnel is still small, and because much digital archive work is financed from fixed-term project funds they may be hard to retain. On the other hand there is a vigorous innovative digital archiving community and a number of organizations, resources and web sites which can offer support, training and advice for existing staff development.

Risks

For institutional archives the risks associated with e-archives are likely to be similar to those of other information systems in general: system failures or catastrophic events which can be planned for with normal backup and security measures and disaster recovery plans. As just mentioned, recruitment and retention of competent staff is always a risk to be reckoned with. For e-archives which have not established a secure institutional budget line and rely on ongoing income generation, continuous fund-raising efforts can be precarious and exhausting. For private or independent archives which do not have obvious stakeholders and rely on fund-raising, these risks are accentuated. For high-profile projects depending on substantial public subsidy political risks can be considerable, as they are at the mercy of public opinion and political priorities.

Conclusion

Digital archives, perhaps even more than other sorts of digital library, are very much work in progress, mainly because of the challenges and unknown future characteristics of long-term preservation, and the relative newness of technology and practice. Digital archivists need to focus in these circumstances on the application of best practice as generally agreed in the professional field. The field is however very active and collaborative and there is no shortage of available support and advice.

Summary

- The principles and processes involved in acquisition, selection and management of archives are essentially the same for digital and non-digital archives.
- Digital archives however bring additional challenges because of the scale of digital production and uncertainty about the technology of long-term preservation.
- Definition of the mission of the archive is essential for business planning. Considerable advice and support is available for business planning in the international digital archiving sector.
- The value proposition of institutional or organizational archives may consist of the preservation of the official record, documentary justification of past decisions and activities and the corporate memory.
- Archiving processes are defined as: pre-ingest, ingest, preservation, storage, data management, administration and access.
- Planning for infrastructure costs and business risk involves similar considerations as for other information systems, with special attention needing to be paid to the costs of preservation and permanent large scale storage.

References

- Boudrez, F. (n.d.) Checklist voor de digitale archivaris. eDAVID. <http://www.edavid.be/davidproject/teksten/Richtlijn8.pdf> (accessed 31 January 2010)
- (Een) Demeterende overheid? Risico's van digitaal beheer van verantwoordingsinformatie bij de centrale overheid (2005) Rijksarchiefinspectie. <http://www.rijksarchiefinspectie.nl/uploads/publications/Een%20demeterende%20overheid%20versie%20DEF%20aerial.pdf> (accessed 30 January 2010)
- ED3: eisen duurzaam digitaal depot (2008). Version 1. Landelijk Overleg Provinciale Archief Inspecteurs. http://www.provincialearchiefinspectie.nl/pdf/ED3_v1.pdf (accessed 30 January 2010)
- Greenstein, D. and Thorin, S. (2002) The Digital Library: a biography. Digital Library Federation. Council on Library and Information Resources. 2nd ed. ISBN 1887334955 <http://www.diglib.org/pubs/dlf097/dlf097.pdf> (accessed 5 June 2010)
- Kinnaes, D. and Schokkaert, L. (2009) Concepten LIAS. Internal document.
- OAIS (2002) Consultative Committee for Space Data Systems. <http://public.ccsds.org/publications/archive/650x0b1.pdf> (accessed 30 January 2010)
- PLATTER (2008) DPE repository checklist and guidance. Digital Preservation Europe. <http://www.digitalpreservationeurope.eu/platter.pdf> (accessed 30 January 2010)

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Schaule, S. (2009) Organisatorische aspecten bij het bouwen en het beheren van een digitaal depot. Expertisecentrum DAVID. http://www.edavid.be/digitaaldepotproject/publicaties/SSchaule_organisatAspecten.pdf (accessed 30 January 2010)

Trusted repositories audit and certification: criteria and checklist (TRAC) (2007) Version 1 CRL and OCLC. http://www.crl.edu/sites/default/files/attachments/pages/trac_0.pdf (accessed 30 January 2010)