Establishing a Community-based Approach to Electronic Journal Archiving: the UK LOCKSS Pilot Programme

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Abstract

Lots of Copies Keep Stuff Safe (LOCKSS[1]) represents a sophisticated combination of technical and business-aware elements that can be deployed to ensure the long-term accessibility to electronic journal content even if the publisher ceases to exist, a subscription is terminated, or the already acquired content becomes damaged. Given the potential benefits of LOCKSS to the UK community, and in consideration of the implications of the NESLi2 licences, the Joint Information Systems Committee[2] and the Consortium of University Research Libraries[3] (JISC/CURL) co-funded a UK LOCKSS Pilot Programme to explore issues associated with the practical implementation of LOCKSS in UK Higher Education institutions. The pilot launched in March 2006 and concluded in July 2008. Following on from our experiences throughout the UK LOCKSS Pilot Programme, this paper discusses the organizational attributes of the LOCKSS approach that we expect to further develop in the UK, describes the types of journal content that the current generation of LOCKSS seems best suited to handle and as a result how LOCKSS may fit into the broader journal archiving environment, and it describes the steps we are taking to ensure both the LOCKSS software and Technical Support Service grow effectively to support library use and information management.

The UK LOCKSS Pilot Programme

Lots of Copies Keep Stuff Safe (LOCKSS) represents a sophisticated combination of technical and business-aware elements that can be deployed to ensure the long-term accessibility to electronic journal content even if the publisher ceases to exist, a subscription is terminated, or the already acquired content becomes damaged. The LOCKSS approach provides a critical component in the journal distribution infrastructure, allowing libraries to take custody of the assets for which they have paid, while enabling them to conform to the licensing arrangements they have agreed with publishers they will adhere to, and sharing the technological infrastructure among the wider UK and global library community. The LOCKSS approach makes certain that libraries are responsible not only for short term access, but also involved at many stages in the emergence of this journal archiving service. The LOCKSS system can help to improve confidence in electronic journals, and could help libraries justify to their academic colleagues a move from mixed print and electronic to all electronic in some cases; eventually providing savings far greater than the cost of participation in the initiative.

The National e-Journals Initiative[4] (NESLi2) Model License developed by JISC for e-journal subscription agreements includes archiving clauses to provide libraries with some reassurances that they will receive continued access to the content for which they have paid. Practical implementations of the archiving clauses, which involve a collaborative agreement between libraries and publishers, are not yet fully in place. LOCKSS provides participating libraries and publishers with a distributed technical architecture to make certain purchased content remains accessible without a necessary dependency on the publisher's market presence. The LOCKSS model really shines in a collaborative context as its implementation within the UK academic library environment has demonstrated. Given the potential benefits of LOCKSS to the UK community, and in consideration of the implications of the NESLi2 licences, the Joint Information Systems Committee and the Consortium of University Research Libraries (JISC/CURL) co-funded the UK LOCKSS Pilot Programme to explore issues associated with the practical implementation of LOCKSS in UK Higher Education institutions. Running between March 2006 and July 2008, the UK LOCKSS Pilot Programme is described in Hockx-Yu (2006) and Rusbridge and Ross (2007).

Briefly, LOCKSS is a collaborative, library-centric approach to electronic journal archiving. Each institution locally runs a LOCKSS box and collects content according to their individual collection development

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1 LOCKSS Website, http://www.lockss.org
2 JISC Website, http://www.jisc.ac.uk
3 Now known as Research Libraries UK (RLUK), http://www.rluk.ac.uk/

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4 NESLi2 Website, http://www.nesli2.ac.uk/

policies. The two year JISC/CURL funded UK LOCKSS Pilot Programme was intended to investigate the practical issues associated with running LOCKSS in the UK and building an effective Alliance of UK institutional partners, to explore issues associated with making available through LOCKSS a wide corpus of journal content which covers the needs of the UK HE library community, and to develop the infrastructure needed to support institutions participating in the LOCKSS approach. At the beginning of the UK LOCKSS Pilot Programme, we determined that in order to run an effective support service we needed to establish a number of distinct components. Our expectation was that at the end of the pilot, with these components in place, an assessment would be made on the desirability of future use of LOCKSS versus available alternatives. The community would share future running costs and technical support (if still necessary) would be built in to an organisation such as the DCC. We recognised that our ongoing support requirements would need to reflect the needs of the UK community. We aimed to set up an infrastructure that would allow us to easily facilitate dialogue between the support service and individual participating institutions. From the outset, the project has built upon the infrastructure of the DCC for technical and training elements. The programme budget included equipment costs for the bulk purchase of LOCKSS boxes, for two years provision of technical support for librarians and technical software and plugin development.

Initially, twenty-four institutions joined the UK LOCKSS Pilot Programme. A further six institutions joined as associate members in July 2006. Throughout the pilot, we hosted a series of workshops bringing together librarians, JISC, and project staff from the UK LOCKSS Pilot Programme and the US LOCKSS Alliance. These workshops allowed different stakeholders to communicate progress, to allow each participant to understand where difficulties were being encountered and improvements could be made, and to ensure that we could achieve consensus on the overall strategy as we adapted to changing requirements and alongside emerging approaches.

Content Complete Ltd[5], JISC's negotiation agent for NESLi2 content, undertook content negotiation to bring in to the LOCKSS system electronic journal content from publishers participating in the NESLi2 initiative. Our objective regarding content was 'to build a substantial collection of e-journals to which the participating institutions have archival rights'. Establishing a procedure to make available open access material in the LOCKSS network was of interest and a sub-project entitled OpenLOCKSS[6] was initiated at Glasgow University to negotiate and make available open-access material.

From August 2008, the UK LOCKSS Alliance will transition from a JISC/CURL funded pilot programme to a full-fledged national service and as part of this transition it will move from the Humanities Advanced Technology Institute (HATII)[7] at the University of Glasgow. The UK LOCKSS Alliance will build on the experiences of the UK LOCKSS Pilot Programme and be hosted by EDINA[8], the UK data centre at the University of Edinburgh, in conjunction with the Digital Curation Centre. All UK Higher and Further Education (HE/FE) institutions are welcome to join the UK LOCKSS Alliance. The UK community will share the costs of running the service and libraries that wish to participate can do so under a JISC Collections banded fee basis.

This paper discusses the organisational attributes of the LOCKSS approach that we expect to further develop in the UK, describes the types of journal content that the current generation of LOCKSS seems best suited to handle and as a result how LOCKSS may fit into the broader journal archiving environment, and it describes the steps we are taking to ensure both the LOCKSS software and Technical Support Service grow effectively to support library use and information management.

Alongside our own internal evaluation throughout the Pilot Programme that will be released this autumn, two recent externally led reports have considered the suitability of LOCKSS in the context of the UK higher education environment. Morrow, *et al* (2008) describes a number of scenarios which suppose that a given publisher is no longer in a position to provide access to electronic content and considers the resultant access as provided through a variety of different journal archiving approaches. Dalton and Conyers (2008) reports on a formal assessment of the UK LOCKSS Pilot Programme, considering the overall success and impact of the Pilot against its original objectives and producing a list of recommendations for the ongoing development and improvement of the UK LOCKSS Community. These reports reach the conclusion that that the UK LOCKSS Pilot Programme has demonstrated a way in which an effective LOCKSS Alliance can be established and run, and provides a model for other national, regional, or trans-institutional consortia groups. We are delighted that these independent reviews reached these conclusions, and have decided that it will be valuable to consider in more detail the organisational attributes that our experience of running the UK LOCKSS Pilot Programme leads us to believe will produce a successful and sustainable journal archiving infrastructure.

Developing an Infrastructure for UK Journal Archiving

The risks that threaten long-term access to journal content are numerous and have been well elaborated in a many papers; for example, Rosenthal *et al* (2005) describes the threats a digital preservation system should address. Morrow *et al* (2008) sketches a suite of scenarios that suppose that a particular publisher ceases

to be in a position to provide access to electronic content. In this section, we describe some of the attributes we believe will result in a strong and stable foundation for the ongoing UK LOCKSS Alliance.

Librarians are looking for long-term solutions to the issues that arise from digital distribution and the 'acquisition' of access to digital objects and they seek to invest in stable, long-term systems and infrastructures. To reassure libraries that the LOCKSS initiative is worthy of continued investment it will be necessary to demonstrate sustainability, not just in financial terms,[9] but also in terms of organisation (for example, by addressing risks that arise from staff turnover or from transition of the organisational responsibility from one lead body to another). Libraries will gradually acquire trust in archiving initiatives as they mature and demonstrate their ability to respond to challenging scenarios. It is though worth examining the contributions the UK community can make in supporting the take up and extension of the initiative.

We believe a core strength of the LOCKSS approach is the collaboration that it fosters between librarians, community bodies such as JISC and CURL, and journal archiving initiatives. The UK LOCKSS Alliance has made first steps towards achieving a financially sustainable approach for the UK by moving away from a grant-funded pilot programme to one where the costs will be met by the stakeholders—that is by those directly benefiting from participation in the initiative. We believe that a crucial next step in guaranteeing a stable, ongoing environment is to ensure that librarians are not just well informed of the architecture, and system operation and content negotiation activities, but actively contribute to the direction and development of the initiative. To achieve this, we hope to build a community organised around core principles to counter some of the more predictable risks that may arise as collaborating organisations act to run a long-term digital preservation initiative.

Share responsibility and governance

Shared governance will foster the development of a UK LOCKSS Alliance that reflects a broad consensus of the UK library and curation communities, and that adapts to meet emerging cultural and technological demands. During the UK LOCKSS Pilot Programme, we found the input of librarians enormously useful and as such we are structuring the UK LOCKSS community so librarians are actively engaged in the initiative as opposed to passive users of its services. LOCKSS is a system embedded within the library organisation and as such should reflect the needs of both library staff working with LOCKSS and patrons using the archived content. By developing a system that closely matches the needs and expectations of the user community, librarians are more likely to

continue to use and value the approach. By basing the model of software development on collaborative and distributed open source principles, system development is not reliant on a single team of individuals or a single organisation's finances, a factor that contributes to mitigating such risks as those that can arise through staff loss or organisational failure. Encouraging active discussion and collaboration is essential if the roles and responsibilities of each of the stakeholders are to be effectively examined, discussed, clarified and agreed. Throughout these discussions there will continue to be intense interest in how LOCKSS compares with other journal archiving initiatives as they emerge and develop. Discussion of the strengths and weakness of other journal archiving systems will provide LOCKSS with an indication of areas for possible development and risk.

Develop UK infrastructure

The UK community should avoid becoming overly reliant on resources outside UK control. In this case the UK curation and library communities need to acquire local knowledge, skills and physical infrastructure for journal archiving. The UK LOCKSS Pilot Programme took steps towards this, providing participants with a working knowledge of the technical and licensing issues associated with collection and preservation of electronic journal content. The support service has developed capacity to contribute to LOCKSS system development and developed a strong working relationship with the LOCKSS Development Team in Stanford. Utilising the expertise of librarians for open access negotiation proved effective within the OpenLOCKSS project and we would like to build on this experience. As we describe in a later section, it is likely that LOCKSS will only cater for a proportion of electronic journal content. Complementary to LOCKSS, there will be alternative approaches focusing on specific types of content and each with their own benefits. Where possible, it seems sensible that the UK community should participate as a collective in these as this will foster a UK-wide sense of shared responsibility for infrastructure and assets.

Develop local collections

Journal archiving initiatives must be monitored if there is to be any certainty that the content being negotiated and preserved is relevant to and in accordance with collection policy contexts of the individual participating institutions. One of the strengths of the LOCKSS approach is that it gives a participating library the ability to determine the content that that institution wishes to preserve. We are exploring mechanisms, described later in this paper, which will provide librarians with appropriate opportunities to identify the broadest range of content they would wish to see targeted for inclusion in UK LOCKSS. We aim to push forward with developing an infrastructure that will provide libraries with the kinds of collections their users need. Working closely with our participating libraries to better understand their collection development needs, plans and trajectories is essential if we are to achieve this goal.

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[9] In 2007, incoming fees from Alliance members covered the costs incurred by the Stanford based LOCKSS team. The Stanford team expects this target will continue to be met in 2008.

The UK LOCKSS Pilot Programme has made first steps towards establishing an environment in accordance with these requirements. Journal archiving will necessitate long-term organisation and management and it seems unwise to rely upon a model where too much responsibility and workload lies with isolated organisations and individuals. Likewise, it would be inappropriate to require individual librarians to undertake onerous activities and procedures. As we move forward, we need to understand which aspects of the LOCKSS approach librarians have found to be successful and where improvements could be made. It is possible that the LOCKSS approach may not be suitable for all institutions. For example, some libraries found that they did not have sufficient resources to manage a LOCKSS box alongside their existing services. Some librarians have indicated they saw inefficiencies associated with the maintenance of multiple archives and that reorganisation of the infrastructure and management to utilise data centres acting on behalf of the HE community might, in their view, lower resource constraints without compromising the benefits of shared responsibility and a semi-distributed architecture. One example of this model is CLOCKSS[10], the sibling initiative of LOCKSS that has established a dark archive of content on behalf of the global community and successfully demonstrated an alternative organisational approach. In theory, there would be nothing to prevent the UK community from establishing an archive similar to CLOCKSS in organisation and structure with a focus on the material currently in LOCKSS. While we might not necessarily promote a move of this kind, and noting that licensing and access issues would certainly arise as a result of such a move, as the UK digital curation community is still at an early stage in terms of infrastructural and system development it is important to (re)assess the variety of options available.

Building collection of journals

The UK LOCKSS Alliance will build on the infrastructure put in place during the UK LOCKSS Pilot Programme and we intend to implement the recommendations from the recent JISC-initiated evaluation report (Dalton, P. and Conyers, A. 2008). Our experiences over the past two years have given us some ideas as to what content we should expect from a LOCKSS network.

Many librarians note that they were motivated to participate in this journal archiving initiative because it allowed them to provide their academics with assurances that a move to an electronic only environment is a safe and stable strategy. As large commercial publishers provide significant quantities of a library's core reading list material, and librarians reflect on the significant and growing proportions of their budgets being directed towards such publishers, librarians are keen to ensure

that the content provided by these publishers is archived in a variety of journal preservation initiatives.

Since their inception, CLOCKSS and Portico have both been notably more successful than LOCKSS in engaging large commercial publishers (for example, both Elsevier and Nature and participating in those two initiatives, but not LOCKSS). At least in the UK, the emergence of CLOCKSS and Portico has somewhat changed the role of LOCKSS. At the beginning of the pilot we anticipated that content from all publishers would be available through LOCKSS, however now we are starting to see LOCKSS as a component in a larger, complementary set of initiatives. Participating in LOCKSS alongside CLOCKSS and/or Portico appears to provide libraries with a balanced approach that enables them to achieve more comprehensive coverage.

With the emergence of CLOCKSS and Portico, it is worth considering the specific role that LOCKSS can play in the journal archiving environment. LOCKSS is particularly suitable for the broad range of journal content material that may be exposed to a relatively high risk but that fall outside the remit of CLOCKSS and Portico. For example, within the Pilot Programme we have been considering the relative risk to which journal content from small, medium and large publishers may be exposed. We will need to establish mechanisms to identify content that is not just of significant scholarly, cultural or resource value, but that is also potentially fragile. At the same time mechanisms are required that facilitate the matching of content corresponding to these latter criteria with the collection development priorities of individual participating libraries. Balancing the content identified and secured through negotiation across the different collection building policy objectives of the participating libraries poses a challenge. The central role of librarians in the development of LOCKSS negotiated and secured content will continue to expand, thus tapping their wealth of experience in making decisions on content acquisition. We would be keen to establish a mailing list, working group, or portal through which at-risk titles can be nominated, and their significance to our research and teaching communities discussed as a key step in reaching consensus on a title's relevance. Subject specialists are well placed to identify titles within particular domains. It may be possible to build these processes into existing library consortia groups, either regional groups such as the North East and Yorkshire Academic Libraries Purchasing Consortium (NEYAL), or national working groups such as the joint Research Library UK/Society of College, National and University Libraries (RLUK/SCONUL) Task Force on Scholarly Information, JISC Journals Working Group, JISC Libraries Advisory Working Group and the JISC Scholarly Communications Group.

Following the recommendation of the Morrow *et al* report, JISC Collections intend to revise the NESLi2 and NESLi2-SMP licenses to require participation by publishers in at least one journal archiving initiative. Embedding archiving requirements within model licences will be instrumental in gaining a higher

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[10] CLOCKSS, for Controlled LOCKSS, is a not-for-profit, community-governed dark archive of web-published content. More information is available at http://www.clockss.org/.

proportion of publisher participation in preservation initiatives. There are many publishers and titles that are not covered by NESLi2 licenses and the processes of negotiating with these will need to be agreed and coordinated. The OpenLOCKSS project was initiated at Glasgow University Library to negotiate and make available open-access material. The OpenLOCKSS initiative has demonstrated a model that can be used for Open Access titles, however the process has shown that a certain degree of perseverance is required when negotiating with publishers.[11] Project staff working on OpenLOCKSS was required to explain the LOCKSS approach and system to publishers who had not previously encountered it, to resolve publisher concerns about the licensing and access arrangements, and to track progress to ensure that overworked publishers were able to complete the required technical work.

As Dalton and Conyers note: "*It was apparent also in the interview with InformaWorld that lack of apparent demand was a major factor in delays in implementation; if there was seen to be a potential demand they would use this as an opportunity to market their membership of LOCKSS to the library community.*"[12] In light of this, we must consider mechanisms so that library demand for participation in preservation services is appropriately conveyed to publishers. Libraries are more likely to demand a publisher is involved in an archiving initiative if the librarians are confident that the proposed initiative is sustainable, viable, and appropriate. In short, librarians must have confidence in the archiving initiative they are supporting. Libraries themselves may wish to consider whether they can establish a policy whereby they require core collections to be archived in at least one of a shortlist of archiving initiatives, of which LOCKSS may be just one option. As highlighted in the evaluation report, attention should be given to ensure librarians can easily identify the content available within the LOCKSS network. EDINA has recently announced that they will be involved in the development of an electronic journal preservation registry service, acting as a single resource that lists each initiative in which a title is archived. Development of this service will be monitored with interest, as it will ease the process by which librarians can identify which titles are not yet available through particular journal archiving initiatives.

While we have found that archiving solutions involving distributed and shared community responsibility have strengths lacking in single institution based solutions, the effort, such as computer system and storage maintenance tasks, that is required from the partners needs to be contained to the minimal necessary. Throughout the pilot we have identified improvements to the user interface that would alleviate some of the required administration effort, and the LOCKSS team in Stanford are currently incorporating these improvements into future releases. Other improvements in the works include such simple changes as bringing clarity to the user interface terminology.

LOCKSS Technical Support Service

One of the key recommendations from the JISC UK LOCKSS Pilot Programme evaluation report was that steps should be taken to minimise the risks associated with UK based support. Support proved to be central to the overall success of the pilot. In considering the transition from pilot to service HATII at the University of Glasgow considered with the Digital Curation Centre its own mission and how this related to the rollout of a LOCKSS service. HATII is a research-led institute and where it runs services these have tended to be as part of research into technical, organisation, and structural aspects of such endeavours. This was the case in the UK LOCKSS Pilot Programme, we were interested to determine whether it was possible to implement an effective technical support service for the thirty-two participating institutions of the UK LOCKSS Pilot Alliance, whether we could construct a substantial collection of e-journals to which the participating institutions would have archival rights, whether we could raise the levels of community engagement with the LOCKSS initiative, and whether we could create the foundation for a self-sustaining UK alliance that will enable institutions to commit to the use of LOCKSS as an e-journal archiving solution following the end of the Pilot Programme. We succeeded in achieving each of the first three goals and believe that we have also achieved the fourth, but will only know for sure about this if the UK LOCKSS Alliance takes off. Despite the praise which the JISCs independent reviewers, Dalton and Conyers (2008) had for HATII's role in this initiative we took the decision that the rollout of a national service did not correspond to HATII's core mission.

Following discussions with EDINA at the University of Edinburgh and a collaborator in the Digital Curation Centre we took the decision to recommend to the JISC that for the development of the UK LOCKSS Alliance the LOCKSS Technical Support Service move to EDINA. The JISC accepted our recommendation and agreed that the EDINA mission to "*enhance the productivity of research, learning and teaching across all universities, research institutes and colleges in the UK by delivering first-rate online services and by working with support staff in university and colleges and with other partners in the academic community, and beyond, and by carrying out successful R&D projects*"[13] was closely aligned with the objectives of the UK LOCKSS Alliance. LOCKSS will complement EDINA's growing set of electronic journal archiving related projects. For example, EDINA has been participating in CLOCKSS for over two years. Bringing LOCKSS and CLOCKSS together will ensure the two initiatives can work together to address the needs of the UK community and the full spectrum of relevant UK electronic journal content. EDINA has every likelihood of emerging as the national centre in the UK with expertise in journal archiving.

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[11] http://www.lib.gla.ac.uk/Research/openlockss/
[12] See Dalton, P. and Conyers, A. (2008); page 19.

[13] EDINA Website, http://edina.ac.uk/about/

Throughout the UK LOCKSS Pilot Programme, we explored the proposed methods by which libraries can access the content stored within a LOCKSS box. By design LOCKSS, itself effectively a transparent HTTP proxy server, was designed to integrate with an institutional proxy server. This would mean that when a client or web browser requested content available at some URL, the institutional proxy server would forward the request to LOCKSS box, which would in turn forward the request to the original publisher and only serve locally preserved content if the requested content was no longer available from the original publisher. However, participating librarians were not keen on this approach. Some institutions did not have an institutional proxy; others were hesitant to integrate LOCKSS into their overall institutional network environment during the pilot. Some questioned who would then be responsible for LOCKSS in the event of system failure; the network team, librarians, or LOCKSS support. There was an overwhelming preference for LOCKSS to serve content corresponding to OpenURLs, links specific to the LOCKSS system that could then be integrated into existing library-based link resolver systems. As a direct output of this discussion, the US-led development team has undertaken development work and a first implementation of the alternative mechanism was released at the end of July 2008. Moving forwards, the processes by which archived journals will be served to users need to be explored in greater detail and continue to be refined in response to experience. For a variety of reasons (e.g. in consideration of access problems by remote readers not able to access content in LOCKSS only available locally), readers should be made aware they are accessing archived material rather than that from the original publisher's website.

The Dalton, P. and Conyers, A. (2008) evaluation report indicated that publisher workflows needed to be improved. Publisher's needed more support on manifest page development[14], perhaps a greater overview of the technology itself, and the situations in which the archived content would be accessed. Complexities have arisen because each publisher, and publisher platform, works in a slightly different way. Developing a generic walk-through that is useful for all, and yet does not confuse readers, has been challenging. We would be open to suggestions for mechanisms that in retrospect might have simplified the process. As we emphasise participation of small, medium and open access publishers the diversity of publisher platforms encountered is likely to increase. Currently, the process for releasing content in the LOCKSS system is complex and requires an involved quality assurance process to be followed. To increase the quantity of content that can be processed and released, we expect to explore the contributions libraries could make to this activity, fostering further knowledge and development effort in the UK community. This would, in addition, reduce

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[14] Manifest pages are the online pages hosted on a publisher's website that authorise an institution to collect and archive a journal volume through LOCKSS. They are only available to those institutions that have archival rights to the content.

dependencies on individual staff members that inevitably produce bottlenecks.

Conclusions

In this paper, we reflected on the process of running the UK LOCKSS Pilot Programme alongside the conclusions reached by the JISC commissioned evaluation reports, and looked at how we can move forward in the UK with LOCKSS-based archiving services. We assert that digital journal archiving can be considered a risk management activity and the UK community must collectively act to distribute and manage the risks associated with long-term access to electronic journals. As we have employed a risk identification approach and here we aim to highlight several pressing issues facing the UK HE/FE library community in long-term electronic journal archiving.

• While it is evident that libraries must actively take measures to prevent loss of access to digital content, it is not evident that one journal archiving approach is technically, culturally, economically or organizationally the best. Currently journal archiving benefits from the use of a variety of approaches.

• Librarians (and indeed publishers) will need a greater awareness of the risks and benefits associated with the different approaches to journal archiving and to factor this knowledge into their decision making processes.

• Different libraries may have different requirements for the delivery of content to users and these individualized needs must be taken into account in the development of archiving services.

• Licensing arrangements and agreements remain a problematic area for long-term preservation initiatives. Librarians, publishers and agents will need to work harder to ensure that the agreements for preservation are negotiated to the mutual advantage of all parties.

• There is a general lack of clarity regarding roles and responsibilities at the institutional, national body, and journal preservation service levels and this is hindering progress towards delivering archiving journal archiving options and solutions.

• Costs remain a sticking point for the development of long-term preservation services. In particular it is hard to justify the costs associated with long-term preservation and to do so within the context of the actual range of services currently being offered. Journal archiving service providers must demonstrate sound financial sustainability and provide a transparent and positive cost benefit ratio to their participating libraries.

From the outset of the Pilot in March 2006 it was evident that the challenges to journal preservation were not merely technical in nature but required that organisational, cultural, and structural challenges be reviewed and addressed. Participatory, collaborative, and distributed initiatives for preservation show real promise, and combining the technical strength of LOCKSS with the ability of the LOCKSS Alliance to

promote relationships with publishers and community driven action by libraries is very promising.

So building on the lessons learned from the UK LOCKSS Pilot Programme we are focused on establishing a stable and sustainable UK LOCKSS Alliance. Central UK coordination has proved valuable by ensuring UK specific issues are effectively identified and resolved consistently and at national level. Indeed having the JISC strongly backing the UK LOCKSS initiatives has been a very positive factor in ensuring their success. We feel that by bringing together institutions to share experiences we are facilitating the development within the information management and library communities of the concepts and issues surrounding journal archiving. As the programme enters the second phase UK LOCKSS will explore new ways in which libraries may contribute to developing journal archiving strategies and mitigate the inherent risks. In response to the concerns of librarians, publishers are increasingly participating in efforts to develop effective journal archiving strategies. By leveraging the skills of the community and integrating the library as an essential component of journal archiving, the UK LOCKSS Programme ensures that the key stakeholders affected by the challenges of the current environment are given appropriate opportunities to participate in the solution.

Acknowledgements

As we completed the final version of this paper (August 2008) Adam Rusbridge moved to EDINA at the University of Edinburgh where he will continue his links with the UK LOCKSS Alliance.

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