

LCONZ INSTITUTIONAL RESEARCH REPOSITORIES PROJECT

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ABSTRACT

The Library Consortium of New Zealand (LCoNZ) has commenced an exciting new project to establish a hosted multi-institutional research repository. The current shareholders of LCoNZ are the AUT University, University of Waikato, Victoria University of Wellington, and the University of Otago.

LCoNZ was established to support member libraries working collaboratively to implement an Information and Resource Access Management System (IRAMS) that included:

1. the ILMS (integrated library management system)
2. the full suite of software required to access and manage licensed electronic resources, provide federated searching and deep linking at the digital content level
3. support for the storage, management and access to locally created digital objects.

The Institutional Research Repositories (IRR) Project addresses part three of the IRAMS, the “storage, management and access to locally created digital objects”. The Project was initiated with the following broad goals:

- use the collaborative infrastructure of LCoNZ to investigate the management of New Zealand digital collections
- evaluate different repository solutions to extend members’ existing experience of both proprietary and open source software
- propose cost-effective options for externally-hosted multi-institutional repositories
- grow the capability within LCoNZ that will lead to sustainable, continuous access to New Zealand digital collections for learning and research
- initially be confined to repositories for research outputs with the expectation that a single preferred solution will be recommended

The IRR Project is being carried out in two phases. The objectives in Phase 1 were to agree on criteria for the evaluation of selected repository solutions, to evaluate different repository solutions, both proprietary and open source, and to make recommendations on the most suitable option for the development of a sustainable, multi-institutional IR using the existing LCoNZ infrastructure. This paper details the processes, findings, recommendations and lessons learned from Phase 1 of the Project and the possible future directions for Phase 2 of the Project and beyond.

Library Consortium of New Zealand

The Library Consortium of New Zealand (LCoNZ) was established in June 2004 with the vision statement:

“To use and develop the best enabling technologies in a pioneering collaboration which will enhance the innovative delivery of library and information resources to the New Zealand tertiary learning and research community”.

The current shareholders of LCoNZ are AUT University (Auckland), University of Waikato (Hamilton), Victoria University of Wellington (Wellington), and the University of Otago (Dunedin). The libraries of the four shareholder universities are customers of LCoNZ. More details on the structure and operation of the Consortium are available at <http://www.lconz.ac.nz>.

LCoNZ business objectives are to:

- Provide a common interface with familiar functionality for the benefit of Library patrons and the New Zealand research community
- Maximise the intellectual investment involved in purchasing and implementing new systems
- Provide a strong development group to work in partnership with vendors
- Purchase a system and develop an implementation approach that facilitates the smooth implementation of the chosen system for other institutions that wish to join the consortium in the future

From its beginning as CONZULsys in 2002, LCoNZ agreed it was implementing more than just a library management system. The broader focus was signalled by use of the term Information and Resource Access Management System (IRAMS). It was agreed that the IRAMS would include:

1. the ILMS (integrated library management system)
2. the full suite of software required to access and manage licensed electronic resources, provide federated searching and deep linking at the digital content level
3. support for the storage, management and access to locally created digital objects.

A key decision was to purchase software and run separate databases in a shared environment rather than common software run on individual sites. This decision was reflected in the RFP sent to vendors for a shared “hosting” environment and was approved by the respective University IT Directors. The requirements outlined in the Host RFP were:

1. To maximise the purchasing power of the university library community, in the face of escalating prices and constrained income

2. To maximise the investment and minimise the time and expense involved in implementing and maintaining the operational and systems environment for the IRAMS
3. To provide a strong development group to work in partnership with the software and host vendors
4. To develop and implement agreed common data, functionality, testing training standards and processes
5. To select a host vendor that has demonstrable capabilities to manage the IRAMS system in a professional and reliable manner for both the initial participating universities and, as it grows, to accommodate other institutions
6. To select a host vendor that will facilitate the development of an efficient and cost effective implementation path to assist both the initial and later institutions migrate to the common systems environment.

Datacom was selected as the host vendor for the IRAMS in 2003.

Institutional Research Repositories Project

The Institutional Research Repositories (IRR) Project relates to part 3 of the IRAMS ie the “storage, management and access to locally created digital objects”. An Institutional Repository (IR) has been defined as a set of services for storing and making available digital research materials created by an institution and its community.

There were a number of drivers which led to the initiation of this project:

1. In 2004, CONZUL (Council of New Zealand University Librarians) approved the following statement on open access, “CONZUL believes that the economic, social and cultural interests of Aotearoa New Zealand will be advanced by the rapid adoption of open access to research and scholarly literature.”
2. Internationally, research funding bodies are requiring that the results of publicly funded research must be available on open access. This assumes that there will be sustainable repositories available in which to deposit those research outputs.
3. Universities in New Zealand had been developing IR expertise but until recently there had not been the rapid growth that had occurred in Australia and the UK where it has been directly stimulated by DEST and JISC funding. Within LCoNZ, the partner libraries had experience with a range of different repository software applications, including Proquest Digital Commons, ENCompass Digital Collections, EPrints, DSpace, and Greenstone.
4. Experts such as David E. Shulenburger, Executive Vice Chancellor, University of Kansas, speaking at the IATUL Conference (2005), had expressed the view that institutional repositories are:

- A “must” if a University is to be able to demonstrate to its funding public its productivity, importance and worthiness as a funding recipient
 - An unnecessarily expensive “must” if done by every university.
- Economies of scale will lead to multi-institutional repositories.

LCoNZ already had the infrastructure in place for the development of a multi-institutional repository and so the IRR Project was initiated with the following broad goals:

- use the collaborative infrastructure of LCoNZ, in partnership with Datacom, to investigate the management of New Zealand digital collections
- evaluate the different repository solutions to extend members’ existing experience of both proprietary and open source software applications
- propose cost-effective options for externally-hosted multi-institutional repositories
- grow the capability within LCoNZ that will lead to sustainable, continuous access to New Zealand digital collections for learning and research.
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The process

The IRR Project is being carried out in two phases. The objectives in Phase 1 were to agree on criteria for the evaluation of selected repository solutions, to evaluate different repository solutions, both proprietary and open source, and to make recommendations on the most suitable option for the development of a sustainable, multi-institutional IR using the existing LCoNZ infrastructure. Phase 1 was completed in November 2006 and the process followed is discussed below.

1. Project Charter

A project charter document was created to ensure that the objectives were clearly defined. It included a communication plan, the roles and responsibilities of project members, a project plan, timeline and risk register. Two key groups were formed to work on this project - a project steering committee and a technical representatives group.

2. Fact finding

The project was scoped to build on existing knowledge and experience within the region. A seminal report was the feasibility study *Institutional repositories for the research sector*, commissioned by the National Library of New Zealand (2005) which recommended the establishment of

a national framework for the development of IRs in New Zealand and support for local initiatives. Visits were arranged to two sites in Australia that were leading the development of open source solutions for institutional repositories - University of Queensland (Fedora/Fez) and Australian National University (DSpace/Manakin). Information was also gathered and shared with other institutional repository projects initiated as the result of funding from the Tertiary Education Commission of New Zealand (TEC).

3. Functionality requirements

A checklist of functionality requirements was devised against which potential IR solutions would be measured. A total of 21 functionality requirements were identified relating to scalability, access to computer source code (sustainability), metadata, security features, interoperability, deployment, system administration, strength/size of the user community, enduser features. Each requirement was then deemed either 'Essential' or 'Desirable' in terms of its importance to the project group. Applications would be assessed on whether or not they satisfied the nominated essential and desirable functionality requirements.

4. Identifying applications for evaluation

Two key criteria were used to identify applications for evaluation – at least one LCoNZ member must have access to the product, and the products must have a community of users/developers within Australasia. As noted earlier, LCoNZ partner libraries already had some experience with a range of different repository software applications. Five products were identified for evaluation based on these criteria, namely DSpace, Fedora, EPrints, Digital Commons and ENCompass for Digital Collections.

5. Functionality testing

A test server was purchased by LCoNZ and installed in the LCoNZ hosted environment at Datacom. Each LCoNZ site already had a direct connection to the hosted environment for the operation of the Library management system. The open source products were loaded on to the test server. The functionality testing was undertaken by the nominated technical representatives from each LCoNZ site and from Datacom. The testing was shared and tasks were allocated to make the best use of pooled resources and areas of expertise. Each product was rated as either 'satisfying' or 'not satisfying' the agreed functionality requirement.

6. Usability testing

As a result of the functionality testing, two products were short-listed for usability testing – DSpace and EPrints. Test scripts were developed based on the agreed functionality requirements, to get feedback on

usability from both end users (academic staff) and system administrators (library staff). This was a difficult and inconclusive undertaking with some inconsistency between the feedback from both groups of users, depending on the experience and opinion of the individual testers.

7. Collation of results and final report

The results of the functionality and usability testing undertaken by each site were collated into a spreadsheet and compared. Where there was a discrepancy in the evaluation of any criteria between the sites, the discrepancies were discussed in an attempt to reach agreement. The results were summarised into a draft report by the Project Manager. The Steering Committee revised and approved the final report with recommendations for presentation to the Board

The process described above was completed in three months from September – November 2006.

Summary of Findings

Five applications were selected for evaluation against the agreed functionality requirements – 3 open source and 2 proprietary software applications.

DSpace, EPrints and Fedora met all of the agreed essential requirements for an institutional repository. Although Fedora met all of the agreed essential requirements it was deemed to be less mature in terms of development. As a result, only DSpace and EPrints were shortlisted for usability testing.

The usability testing resulted in neither DSpace nor EPrints standing out as being clearly superior, with both products seen to have advantages and disadvantages. By this time (Nov 2006) D-Space had already been adopted by 3 of the 8 universities in New Zealand, which meant that there would be a strong local regional group for development. Consequently D-Space was nominated as the preferred solution for LCoNZ.

Recommendations

The Report on Phase 1 of the Project made a number of recommendations to ensure LCoNZ moves forward with IRR applications in a collaborative way while acknowledging the immediate needs and priorities of each member institution. In summary the recommendations included:

1. To prepare a phase 2 project proposal with the expectation that DSpace is the most feasible option for the majority of LCoNZ members.
2. To involve IT Directors (or their nominee) from each University to assist with the preparation of the phase 2 proposal and in particular to articulate the advantages, disadvantages and cost estimates of a shared, remotely hosted technical solution.

3. To meet the immediate needs of each University in the interim period before a functioning LCoNZ solution becomes available.

These recommendations were accepted by the LCoNZ Board and work has since commenced on Phase 2 of the Project. It is hoped that a hosted multi-institutional repository based on DSpace will be operational by the end of 2007.

Lessons Learned

As a member of the LCoNZ IRR Project Team, I would like to share some insights which may be of interest to others who are about to embark on a similar project for the establishment of an institutional repository. These are based on the writers own personal observations:

1. Collaboration takes time and effort.
When working with partners on a project like this, you need to allow sufficient time for consultation and to be really clear about why you are collaborating and what you hope to accomplish. Every new project is a new venture and it is preferable not to make assumptions based on previous projects or collaborations with those same partners.
2. Open source vs proprietary software solutions.
Understand the differences and decide which type of solution you want before evaluating the available products. In this project we evaluated a mix of open source and proprietary applications. Although some features and functionality are common to both, there are fundamental differences which make comparison much more complex.
3. Technical infrastructure is not the major problem.
With the cost of storage becoming cheaper and capacity increasing over time, technical infrastructure is no longer a major obstacle to the establishment of an institutional repository. None the less there are still economies of scale and savings to be made by sharing technical infrastructure and technical expertise. It has taken some time for us to recognise that this holds true for institutional repositories in the same way that it does for the hosting of an integrated library management system.
4. The need to share knowledge, skills and expertise.
Maintaining digital repositories is emerging as a strategically important new role for academic libraries that requires the development of new knowledge, skills and expertise. The literature suggests that developing a policy framework and administrative procedures to ensure open access and future sustainability are the big issues for repositories. If you have the luxury of time and unlimited resources to go it alone you are fortunate. If you don't, then find some partners who are committed to collaboration and willing to share knowledge, skills and expertise.

Possible Future Directions

It is anticipated that this project could lead to further development of the IRAMS which may include the following activities:

1. Use the experience gained from this project to assist with the responsibility that libraries are being asked to accept, for the management of not only research materials but also the sources of research i.e. the base material of research data, as discussed at a recent meeting of the OECD (2004).
2. Develop options for externally hosted multi-institutional repositories for a range of digital objects. Investigations overseas indicate that there is no one solution that will meet all needs but rather a range of software solutions may be required for different types of objects and different sizes of institution. Provided they are all standards based using international protocols (OAI-PMH), the existing search engines that students and staff are familiar with (e.g. Google Scholar, OAIster) can be used as discovery tools for access and retrieval.
3. Develop models for multi-institutional repositories that could be offered as a business arrangement to institutions beyond LCoNZ. LCoNZ sees multi-institutional repositories as an economic alternative for large institutions with extensive digital collections, as well as a possible solution for smaller institutions with limited inhouse expertise.
4. Develop LCoNZ as a centre of excellence in the management of New Zealand digital collections, providing continuity and sustainability. The established LCoNZ infrastructure is already used by its members as an umbrella for collaboration to share knowledge, expertise, workload and costs of developing and implementing new technologies.

Further information on the IRR Project is available online from the LCoNZ website at <http://www.lconz.ac.nz>

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