

# Institutional Repositories in Australia: An annotated bibliography for academics

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## Introduction

Over the past five years, the rise of digitized research has prompted special collections known as institutional repositories (IRs), which collect, organize, share, and retain material produced by academic communities (Creaser, et al 2010). Most IRs are maintained by library staff, who usually provide guidance and support for submitters from within institutional communities (Shreeves & Cragin 2008).

IRs, together with open-access journals, represent a key modality for promoting universal access to research in accordance with the open-access movement, which seeks to bypass existing publication models based on ownership of intellectual content by commercial journals (Crow 2002).

Repositories have gained impetus because of the contemporary funding environment faced by institutions internationally (Crow 2002). In Australia, for example, the Research Quality Framework makes government funding contingent upon research output, and IRs offer a means of organizing and delivering this information (Fernando 2007).

Repositories offer institutions and academics a number of benefits. Less than 83% of Australian researchers have a plan for managing their research data over the long term, highlighting the importance of IRs for centralized preservation (Henty 2008). In addition, IRs promote the discovery and use of material by making them findable in cross-repository sharing systems and via commercial search engines (Shreeves & Cragin 2008). Fernando (2007) describes evidence that articles available in open-access are cited earlier and more often than those that are not.

### Technical aspects of IRs

IR managers face numerous operational decisions. For example, the choice of IR software is crucial – it's interface and functionality can be the difference between a repository being utilized or rejected by submitters and users (Shreeves & Cragin 2008).

The kinds of digital objects submitted to IRs are diverse and complex, and come with varying types and qualities of associated descriptive data (metadata) (Chapman, Reynolds, & Shreeves 2009). Workflows for ingesting material, including what metadata to collect, what standards (schemas) to adopt to govern it, and who should submit it, has implications for user-uptake, the quality of metadata, and ultimately the capacity of the IR to fulfill its functions (Chapman, Reynolds, & Shreeves 2009). Metadata makes material identifiable, searchable, and sharable (interoperable) with external systems (Shreeves & Cragin 2008). However, maintaining metadata quality is expensive and labor-intensive, and can be compromised if left in the hands of user-submitters without editorial guidance by trained IR staff (Chapman, Reynolds, & Shreeves 2009).

### Issues in IRs

As IRs attempt to expand they face a difficult challenge securing skilled staff, promoting their service, securing institutional support, and promoting uptake by the institutional community (Henty 2008).

To date, submission rates to IRs are notoriously low, so IRs often seek-out material (Chapman, Reynolds & Shreeves 2009). As a result, the types of materials IRs ingest has diversified – including theses, working papers, and administrative records – potentially at the cost of maintaining the perceived integrity of IRs’ function and value (Shreeves & Cragin 2008). Some argue that this focus on sourcing material also comes at the expense of other priorities, such as preservation efforts (Shreeves & Cragin, 2008).

The collection and management of the research data (‘data curation’) is another trend that broadens the scope of IRs, but brings its own set of challenges (Henty, 2008).

### The Australian Context

In Australia, the picture for IRs is positive: governmental support is high, with funding available for IR development, and mandates in place from funding bodies to promote uptake (Fernando 2009). There is an impressive 64 Australian institutions currently registered on the Registry of Open Access Repositories (ROAR; <http://roar.eprints.org>).

This subject portal was developed with the aim of informing Australian academics about IRs, including their purpose and function, their procedures, and current issues in the Australian and international context. It directs users to a concise set of high-quality, recent resources, primarily derived from the peer-reviewed literature and with a high degree of Australian content.

### Audience

This portal is intended for the potential users of Australian IRs – academics that may either submit material to or access material from an IR. It is not assumed the audience is familiar with IRs or associated issues.

### Inclusion criteria

The following inclusion criteria were adopted as a guideline to select material that was relevant, useful, and available:

1. *Relevance, chronological*: A strong preference was given to material published in the past five years
2. *Relevance, geographic*: A preference was given to material containing content relevant to Australia
3. *Relevance, scope*: Material was selected in order to ensure the portal covers certain content domains (see below)
4. *Utility*: Material was considered useful for the target audience if its content was (a) informative and/or practical, and (b) of high quality. This criterion was assessed by scrutinizing the content of articles and examining the sources. Preference was given to peer-reviewed literature (as evaluated by Ulrich’s Periodical Directory; <http://ulrichsweb.serialssolutions.com>)
5. *Availability*: All material considered for inclusion was available online in full-text

## Scope of content

Resources were selected in order to ensure coverage of the following content-areas that were considered, *a priori*, to be of importance:

1. *An overview of IRs*
2. *Technical aspects*: includes software, metadata, and workflows
3. *Issues in IRs*: includes issues relating to user-uptake, staffing and training, preservation of digital records, data-curation, and the open-access movement
4. *The Australian context*

## Search Strategies

The LCSH subject term “Institutional Repositories” was used in subject-searches on three bibliographic databases: Australian Library and Information Science Abstracts (ALISA; via Informit), Library Information, Science, and Technology Abstracts (LISTA; via Ebsco) and Library and Information Science Abstracts (LISA; via Proquest).

A subject search of ALISA produced no results. A further search of all fields using “Institutional Repositor\*” produced two conference papers from 2004.

Subject searches were performed on LISTA and LISA with results narrowed to peer-reviewed journals published since 2006. LISTA and LISA returned 413 and 59 results respectively. There was a high degree of overlap between the LISA and LISTA searches.

Searches were performed on Google to identify Australian resources related to institutional repositories, which returned the websites for bodies including the Australian Partnership for Sustainable Repositories (APSR; [www.apsr.edu.au](http://www.apsr.edu.au)), the Australian National Data Service (ANDS; [www.ands.org.au](http://www.ands.org.au)) and Australian Research Repositories Online to the World (ARROW; [arrow.edu.au](http://arrow.edu.au)). Grey literature was located on these sites and additional resources were perused from their ‘links’ pages.

The results of all searches were pooled and perused for material fulfilling most of the inclusion criteria. Fifty-two items were short-listed.

The final thirteen items were selected based on a more rigorous assessment against the inclusion criteria, with a view to covering the four content areas.

## Overview

The final list consists of thirteen resources, which are presented in alphabetical order below. In Table 1 the resources are indexed by content area.

Nine (68%) resources are articles from peer-reviewed journals. One (Crow, 2002) was an institutional position-paper, two were conference papers (Henty 2008; Fernando & Gibson 2007), and one was from a non-refereed journal (Rieger 2007).

All resources were published since 2007, except for one seminal article (Crow 2002) that was included because it was considered important for establishing background context.

Good quality and useful Australian content was difficult to obtain. Four (30%) of the final resources contained Australian content (Henty 2008; Brownlee 2009; Kennan and Kingsley 2009; Fernando & Gibson 2007), two of which were from peer-reviewed journals. One short-listed peer-reviewed paper was rejected on the basis of poor quality and lack of utility. Although a large amount of grey-literature was located on the websites of organizations such as APSR, very little was considered useful to the intended audience.

Four (30%) resources provided a broad overview of IRs; two (15%) were specifically related to the Australian IR context; six (46%) dealt with technical aspects of IRs; and nine (69%) discussed specific issues relating to IRs.

**Table 1. References indexed by content area**

Topic	References
<b>An overview of IRs</b>	Crow (2002) Furlough (2009) Henty (2008) Shreeves & Cragin (2008)
<b>The Australian context</b>	Henty (2008) Kennan & Kingsley (2009)
<b>Technical aspects</b> Eg. software, metadata, and workflows	Brownlee (2009) Chapman, Reynolds & Shreeves (2009) Fernando & Gibson (2007) Furlough (2009) Reiger (2007) Shreeves & Cragin (2008)
<b>Issues in IRs</b> Eg. user-uptake, staffing and training, preservation of digital records, data-curation, and the open-access movement	Brownlee (2009) Chapman, Reynolds & Shreeves (2009) Creaser (2010) Creaser, et al (2010) Crow (2002) Henty (2008) Horrell (2008) Shreeves & Cragin (2008) St Jean, et al (2011)

## Bibliography

Brownlee, R 2009, 'Research Data and Repository Metadata: Policy and Technical Issues at the University of Sydney Library', *Cataloging & Classification Quarterly*, vol. 47, no. 3-4, pp. 370-9, viewed 12 May 2011, <<http://search.proquest.com/docview/57753588?accountid=13552>>

Describes policy and technical issues at EScholarship, the University of Sydney's institutional repository, relating to the collection and management of research data. The research environment at the University of Sydney is described, focusing on four collections and the diverse data they contain, including quantitative data stored in databases and spreadsheets, images, and geospatial data, each of which are associated with metadata of differing type and quality. The current methods used by academics to manage their data are overviewed.

The authors describe EScholarship, including the metadata schemas used to describe diverse materials. The complexities involved in dealing with the metadata associated with submitted material are discussed, including methods for mapping native metadata to the IR's schema. The article concludes by considering future challenges, such as meeting the need for staff with specialized skill-sets, and promoting uptake by seeking the support of the institution to incorporate the IR into research workflows.

**Keywords:** *users, metadata, workflows, data-curation*

**Australian:** Yes

**Peer-reviewed:** Yes

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Chapman, J, Reynolds, D & Shreeves, S 2009, 'Repository Metadata: Approaches and Challenges', *Cataloging & Classification Quarterly*, vol. 47, no. 3-4, pp. 309-25, viewed 5 May 2011,

<<http://search.proquest.com/docview/57743702?accountid=13552>>

Authors representing IRs at each of three institutions (University of Minnesota, John-Hopkins University, and University of Illinois at Urbana-Champaign) describe the kinds of material they deal with, metadata issues they face, and their experiences with using the open-source IR software *DSpace*.

The authors describe the challenges of the “mixed-metadata environment” their staff face when attempting to ingest material and organize and assign its metadata. They describe attempts to maintain metadata quality, and the need to perform costly and technically-demanding modifications on D-Space’s default metadata schema settings.

Authors describe compromises reached between minimizing costs, maximizing metadata quality, and involving institutional communities in the IR processes.

The article concludes with recommendations for IR software packages to expand metadata, allow for more complex structural relationships to be defined between digital objects, and permit greater control of terms such as author’s and publisher’s names.

**Keywords:** *users, metadata, workflows, software*

**Australian:** No

**Peer-reviewed:** Yes

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Creaser, C 2010, 'Open Access to Research Outputs—Institutional Policies and Researchers' Views: Results From Two Complementary Surveys', *New Review of Academic Librarianship*, vol. 16, no. 1, pp. 4-25, viewed 14 May 2011

<http://www.informaworld.com/smpp/ftinterface~content=a919646948~fulltext=713240930~frm=content>

Describes two complementary studies conducted by the authors in 2008. Study 1 was a survey of 93 institutional repositories (IRs) in UK Universities to determine institutional policies for IRs. Only 23% of institutions had an IR policy, with policies being planned in another 33%. Study 2 was a survey of 2122 researchers and academics, 702 of which were from institutions whose IRs

completed Survey 1, to determine their views and practices relating to IRs and open access. Results suggested that researchers were largely unaware of IR policy, or even whether their institution had an IR. Researchers were suspicious of either submitting to or sourcing from open access archives and were somewhat ignorant of the purpose and potential of IRs and the open-access movement. The authors discuss these findings in terms its implications for open access and the need for a culture-change.

**Keywords:** *users*

**Australian:** No

**Peer-reviewed:** Yes

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Creaser, C, Fry, J, Greenwood, H, Oppenheim, C, Proberts, S, Spezi, V & White, S 2010, 'Authors' Awareness and Attitudes Toward Open Access Repositories', *New Review of Academic Librarianship*, vol. 16, no. Suppl 1, pp. 145-61, viewed 14 May 2011,

<http://www.informaworld.com/smpp/ftinterface~content=a928309069~fulltext=713240930~frm=content>

Discusses the uptake of institutional repository services in the context of the existing journal-based publication paradigms, and examines literature suggesting that although use of repositories is increasing, the rate of uptake differs greatly between disciplines. Describes a web-based survey conducted by the authors of 3139 European and UK academics, and a series of focus groups, examining the level of awareness academics possess about institutional repositories, and their attitudes towards them. Findings suggested that researchers understand and support open-access and a repository-based means of distribution. For example, the cost cited reason for submitting publications to a repository were “free access to all”, and “widespread availability”. However, researcher’s understandings about open access varied widely across disciplines. For example, respondents from the physical science and mathematics were more supportive of subject-specific repositories whereas those from social sciences were more supportive of institutional repositories. The most frequently cited perceived barriers to submitting were copyright concerns, uncertainty about embargo periods, and unwillingness to mix their content with non-peer-reviewed content.

**Keywords:** *users*

**Australian:** No

**Peer-reviewed:** Yes

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Crow, R 2002, *The Case for Institutional Repositories, SPARC Position Paper*, Scholarly Publishing & Academic Resources Coalition, viewed 20 April 2011, [http://www.arl.org/sparc/bm~doc/ir\\_final\\_release\\_102.pdf%3E](http://www.arl.org/sparc/bm~doc/ir_final_release_102.pdf%3E)



This Scholarly Publishing and Academic Resource Coalition (SPARC) position-paper outlines a rationale for IRs, including serving as tangible indices of institution's and researcher's research output for purposes of funding and evaluation.

IRs are placed within the context of a "disaggregated publishing model" where control of scholarly information is not concentrated within journals. He suggests an important role for IRs in providing more liberal access to scholarly research, a reduction in the monopoly of research by powerful journals, and financial gains for libraries and institutions that use such research. The author defines IRs ("digital collections capturing and preserving the intellectual output of a single or multi-university community") and describes their essential elements. He positions libraries as the natural administrators of repositories. The author concludes by describing the impact of IRs on various stake-holders (including libraries, academics, various publishers, and government agencies) and their implementation costs. He suggests that whilst IRs herald new publishing models, with the challenges that brings, they can be implemented without radically challenging the current models and without huge financial and technical outlay for institutions.

**Keywords:** *overview, open-access*

**Australian:** No

**Peer-reviewed:** No

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Fernando, B & Gibson, D 2007, 'All change: The ever evolving institutional repository at the University of Melbourne', paper presented to ALIA National Library and Technicians Conference, Melbourne (Australia), 9-12 October 2007, <http://eprints.rclis.org/bitstream/10760/10460/2/allchange07-09-26.pdf%3E>

This conference paper describes the University of Melbourne E-Prints Repository (UMER). It begins by reviewing the purpose and function of IRs, and the Open Archives Initiative framework, upon which many IRs are built. The paper goes on to describe the role of repositories in the open-access movement, and how this has led to collaborative partnerships between IRs. The benefits of an open-access model, including universal availability and increased citations, are reviewed.

The paper describes the situation at Melbourne University, where many departments already maintain a server for archiving research outputs, and there was some difficulty selling the benefits of an institution-wide repository. UMER is described, including its workflows, and its collection development policy, which attempts to maintain the quality of repository material. The paper concludes by discussing future training and staffing needs.

**Keywords:** *workflows*

**Australian:** Yes

**Peer-reviewed:** No

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Furlough, M 2009, 'What We Talk About When We Talk About Repositories', *Reference & User Services Quarterly*, vol. 49, no. 1, pp. 18-32, viewed 2 May 2011, [http://www.rusq.org/wp-content/uploads/2010/09/49n1\\_enrichment.pdf](http://www.rusq.org/wp-content/uploads/2010/09/49n1_enrichment.pdf)

The author discusses the concept and proposed purpose of repositories. He describes some of the ‘hype’ around IRs, including promises that they would circumvent the commercial monopoly on research output. The author notes that IRs are not homogenous entities, demonstrating a wide variety of content, agendas, and processes. Fedora and DSpace, two popular IR systems, are discussed, and the service-models of various IRs are described, including instances where submission of material to IRs is mandated.

Two theoretical models of archival and scholarly practices are described in order to define the tasks required of IRs and their software systems at different stages of a digital object’s life-cycle. The author concludes by suggesting that the role of repositories must be considered within the broader context of digital-object life-cycles and the needs of user communities.

**Keywords:** *workflows, software*

**Australian:** No

**Peer-reviewed:** Yes

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Henty, M 2008, 'Dreaming of Data: The Library's Role in Supporting eResearch and Data Management', paper presented to Dreaming 08, the Biennial Conference of the Australian Library and Information, Alice Springs, 2-5 September 2008, [http://www.apsr.edu.au/presentations/henty\\_alia\\_08.pdf%3E](http://www.apsr.edu.au/presentations/henty_alia_08.pdf%3E)

This paper describes the current eResearch environment in Australia, stating that increased focus on eResearch requires enhanced standards for data management. The author notes that institutional capacity and individual capabilities to support eResearch have not kept up with the demand for quality eResearch. Libraries are identified as the key agencies responsible for such “data stewardship”.

The open-access movement is discussed, including barriers to open-access from individual researchers and the publication industry. The paper describes two surveys conducted by the Australian Partnership for Sustainable Repositories (APSR) in 2007. The Skills for eResearch project concluded that institutions need to develop systems and foster skills to best manage their research output over its life-cycle. The Data Management Survey of Australian found that academics hold data in a wide variety of formats and very few have plans for its long-term management. The paper concludes by discussing agencies involved in Australian eResearch.

**Keywords:** *overview, Australian context, open-access, staffing, data-curation*

**Australian:** Yes

**Peer-reviewed:** No

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Horrell, J 2008, 'Converting and preserving the scholarly record: An overview', *Library Resources and Technical Services*, vol. 52, no. 1, pp. 27-32, viewed 14 May 2011, <http://www.pla.org/ala/mgrps/divs/alcts/resources/lrts/archive/52n1.pdf#page=29>

The issues surrounding preservation of digital objects are considered. For example, digital objects complicate the task of defining what a record is. Digital objects are highly mutable, making them 'slippery' objects to capture for preservation. Digital objects exist in an online-environment that prioritizes current content at the cost of neglecting preservation of legacy content. Ownership of digital objects is complex – content, even that produced from within the institution, is maintained by commercial bodies and is often unavailable to libraries in such a way as to permit preservation. Various promising preservation initiatives are described, including Lots Of Copies Keep Stuff Safe (LOCKSS), Portico, the Library of Congress National Digital Information Infrastructure and Preservation Program (LC-NDIPP), and the internet archive "Wayback Machine". Institutional efforts to preserve their own content are discussed, including cultural-, funding-, implementational-, and policy-related challenges.

**Keywords:** *preservation*

**Australian:** No

**Peer-reviewed:** Yes

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Kennan, M & Kingsley, D 2009, 'The state of the nation: A snapshot of Australian institutional repositories', *First Monday*, vol. 14, no. 2, viewed 28 April 2011, <<http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2282/2092>>

This paper describes a 2009 survey conducted by the Authors of all 37 Australian institutions with IRs. The authors review the environment for IRs in Australia in 2008, including numerous Australian government initiatives demonstrating support for IRs and open access. The survey revealed 32 Universities with active IRs in September 2008. The authors concluded that Australian IRs were growing rapidly, but that processes for ingest into the repository were still inefficient. Although libraries managed the majority of repositories, the technical aspects of operating IRs requires greater training and recruitment of staff with specialized skill-sets. Whilst the IR software *DSpace* was most prevalent in the US, Australian institutions preferred *Fedora*. At the time of the study, funding models for IRs were improving, being increasingly incorporated into institution's operational costs.

**Keywords:** *Australian context*

**Australian:** Yes

**Peer-reviewed:** Yes

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Rieger, O 2007, 'Select for success: Key principles in assessing repository models', *D-Lib Magazine*, vol. 13, no. 7/8, viewed 26 May 2011, <<http://www.dlib.org/dlib/july07/rieger/07rieger.html%3E>>

Overviews key considerations in selecting software systems for an institutional repository. The author lists some of the key purposes of an institutional repository and describes the digital curation life-cycle, discussing the role of the

software system in meeting IR needs at various stages of digital object curation. Primary considerations involve identifying key stakeholders and conducting an analysis of their needs, assessing the needs and functions of the repository and formulating a service definition, identifying resource requirements, and understanding the existing culture and practices of the workplace. The article concludes by reviewing some of the potential functionality of a repository system that should be evaluated when considering a particular product.

**Keywords:** *software*

**Australian:** No

**Peer-reviewed:** No

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Shreeves, S & Cragin, M 2008, 'Introduction: Institutional Repositories: Current State and Future', *Library Trends*, vol. 57, no. 2, pp. 89-97, viewed 27 April 2011, [http://muse.jhu.edu/journals/library\\_trends/v057/57.2.shreeves.pdf](http://muse.jhu.edu/journals/library_trends/v057/57.2.shreeves.pdf)

The authors define IRs, examine their varying sizes, scopes, and functions, and describe attributes that appear common across IRs.

Some of the early hopes for IRs are discussed, including global, interoperable repositories that would challenge the serials-based model of research ownership. This is contrasted with the current situation where IRs appear unsure of their purpose:

- Low self-archiving rates have hampered the vision for IRs, motivating them to widen the scope of their content to justify their existence. As a result, only a minority of IR content is actually peer-reviewed publications, detracting from the clarity of the original “purpose” of IRs.
- Software packages are often seen as inadequate to manage the range of materials collected (especially data) and fail to provide services users are after.
- For many IRs, maintaining a flow of new material appears to be a priority, at the cost of preservation efforts.
- IRs suffer from a lack of support by institutions, and are not incorporated into the wider picture of what a library offers an institution.

The authors conclude by discussing data curation as a more recent development in the perceived role of IRs, which calls for better infrastructure and a new set of skills in the IR workforce, and new models for collaboration between libraries and researchers.

**Keywords:** *overview, open-access, users, data-curation, software*

**Australian:** No

**Peer-reviewed:** Yes

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St Jean, B, Rieh, SY, Yakel, E & Markey, K 2011, 'Unheard Voices: Institutional Repository End-Users', *College & Research Libraries*, vol. 72, no. 1, pp. 21-42, viewed 12 May 2011, <http://crl.acrl.org/content/72/1/21.full.pdf+html>

Describes a study involving telephone interviews with 20 end-users (people who access material on IRs) of five IRs to examine with experiences. The authors concluded that institutions should promote IRs more effectively, increase content, and develop the functionality of IR software and the appearance of its interface. They

suggest that the credibility of IR documents should be better documented, such as specifying criteria for including material in the IR and indicated whether a document has been peer-reviewed. The authors conclude by recommending that further research into end-user needs would help IR developed tailor IRs to suit those needs, thereby potentially increasing service-utilization.

**Keywords:** *users*

**Australian:** No

**Peer-reviewed:** Yes