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## LIBRARIANS ROLE IN DEALING WITH IRS AND OPEN ACCESS

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### Abstract

*The article presents a brief overview of Open Access, IRs and Librarians role. Universities and other institutions can have complex motives for establishing IRs; providing free access to all IR materials is often one of them. Open access initiatives may focus on technical support costs of IRs, while librarians may also be concerned with various other problems such as staff and user training and support, IR advocacy and promotion, metadata creation and maintenance, and long-term digital preservation etc. Consequently, we can see IRs as cheap to support and quick to implement, while as librarians we can take a more cautious approach that takes in to consideration other constraints and the library maxim that it is easier to establish a new service than to stop offering one. IRs are best seen as an enabling technology for open access and as their best hope for establishing permanent repositories.*

**Keywords :** Open Access, Institutional Repositories, Open Access Softwares, Librarians

### 1. Introduction - Institutional Repository

Institutional repositories are a fairly recent development; there are different views about IRs. An university-based institutional repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution.

Notable in the above statement is the emphasis on long-term preservation. Since preserving digital information, which can be prepared in a wide variety of formats (e.g. ASCII, HTML, or PDF), is not simple and the long-term costs of doing so are basically unknown, it is no small matter for a university to commit to preserving all these diverse and ever changing formats forever. An institutional repository is defined to be a web-based database (repository) of scholarly material, which is institutionally defined (as opposed to a subject-based repository); cumulative and perpetual (a collection of record); open and interoperable (e.g. using OAI-compliant software); and thus collects, stores and disseminates (is part of the process of scholarly communication). In addition, most would include long-term preservation of digital materials as a key function of IRs.

Institutional repositories – used in this paper to mean digital collections capturing and preserving the intellectual output of a single or multi-university community – provide a compelling response to two strategic issues facing academic institutions. Such repositories: Provide a critical component in reforming the system of scholarly communication – a component that expands access to research, reasserts control over scholarship by the academy, increases competition and reduces the monopoly power of journals, and brings economic relief and heightened relevance to the institutions and libraries that support them; and Have the potential to serve as tangible indicators of a university's quality and to demonstrate the scientific, societal, and economic relevance of its research activities, thus increasing the institution's visibility, status, and public value.

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## 2. Contents of IR

An institutional repository includes a variety of materials produced by scholars from many units, such as e-prints, technical reports, theses and dissertations, data sets, and teaching materials. Some institutional repositories are also being used as electronic presses, publishing e-books and e-journals.

- Scholars' personal web sites often provide access to their e-prints (and possibly other digital publications); however, they are for a single individual, not an institution.
- Academic department/unit archives provide access to the e-prints (and possibly other digital materials such as technical reports) of one department or other academic unit (e.g. school), but they do not provide access to a wide variety of types of materials for the entire institution. Example: Utrecht University, Department of Mathematics, [www.math.uu.nl/publications/Preprints/](http://www.math.uu.nl/publications/Preprints/)
- Institutional e-print archives provide access to that institution's e-prints, but not to other types of digital materials produced by the institution. Example: Glasgow ePrints Service, <http://eprints.gla.ac.uk/>

Perhaps the best way to understand IRs is to use a few of them. Below are links to selected IRs:

Using these definitions, we can make distinctions between IRs and other types of digital repositories:

- Boston College: <http://escholarship.bc.edu/>
- Caltech Collection of Open Digital Archives (CODA): <http://library.caltech.edu/digital/>
- espace@Curtin: <http://espace.lis.curtin.edu.au/>
- Glasgow DSpace Service: <https://dspace.gla.ac.uk/index.jsp>
- MIT: <https://dspace.mit.edu/index.jsp>
- Universiteit van Amsterdam: <http://dare.uva.nl/en>
- University of California: <http://repositories.cdlib.org/escholarship/>
- University of Rochester: <https://dspace.lib.rochester.edu/index.jsp>

Many fairly standard content management functions are needed for IRs, including access control mechanisms, updating and information retrieval. Key aspects are facilities for easy submission of content by authors and academics, appropriate workflows for institutional purposes and sufficiently powerful, open standards-based dissemination functionality to attract contributors within a largely voluntary implementation. The systems also require unusual levels of scalability and methods of ensuring the integrity of content so that users trust the repository for the long term.

Research libraries in several countries are leading development, including the USA (such as DSpace at MIT with Cambridge University in the UK, the University of California's eScholarship Repository, see [www.bepress.com/repositories.htm](http://www.bepress.com/repositories.htm)), Vidyanidhi – Digital Library and E – Scholarship Portal in India ([www.vidyanidhi.org.in](http://www.vidyanidhi.org.in)), INFLIBNET in India has configured D Space software and content is being archived (<http://dspace.inflibnet.ac.in>). Canada (where CARL is developing a programme), and the UK (where the JISC Focus on Access to Institutional Resources (FAIR) Programme ([www.jisc.ac.uk/index.cfm?name=programme\\_fail](http://www.jisc.ac.uk/index.cfm?name=programme_fail)) does not yet specifically promote the IR terminology but has a number of projects under way).

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### 3. Need of IRs

Scholarly communications are being restructured for the digital environment. Scholarly publishing has led to widespread experiments in open archiving. These have been supported by development of the OAI Protocol for Metadata Harvesting ([www.openarchives.org/OAI/openarchivesprotocol.html](http://www.openarchives.org/OAI/openarchivesprotocol.html)) and new standards for structured digital object storage and exchange formats. As digital rights become ever more important, institutions have begun to pay more attention to their production.

Knowledge, or intellectual capital, produced by scholars and their parent institutions (universities) tends to end up being disseminated by commercial publishers, who are required to undertake the work of identifying and selecting appropriate material for capture, preservation and publication. Output from individual universities is dispersed to publishers and then to library collections. These are increasingly limited in what they can afford to purchase. The Internet enables the principal functions of scholarly communication to be unbundled, giving rise to new ways of sharing knowledge and new opportunities for institutions to use their intellectual capital as a more effective indicator of academic quality.

Many elements of IRs are well understood, since they are shared with less specialised content management systems. For example, e-print servers such as the LOCKSS (short form “lots of copies keep stuff safe” – <http://lockss.stanford.edu>) project at Stanford University addresses the question of providing permanent access to Web publications. Already some lucid analysis has been published, that should be useful for other institutions considering digital content management. It has been argued that such developments will open up “entire new forms of scholarly communication”.

Institutional repositories offer a strategic response both to the opportunities of the digital networked environment and the systemic problems in the today’s scholarly journal system.

### 4. Advantages of IRs

The main advantages appear to include:

For users :

- Expansion of the range of knowledge that can be shared.
- Opportunities to simplify and extend dissemination.

For institutions :

- Enabling of IPR to be exploited more effectively at institutional level.
- Leverage of existing investment in information and content management systems.
- The highlighting of the quality of intellectual capital.

For all:

- Opportunities for new forms of scholarly communication.

Flexible ways to develop existing scholarly communications

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## 5. Disadvantages of IRs

- They need top-down and bottom-up support.
- They affect the balance of institutional power as some departments proceed faster than others.
- They rely on unproven methods for long-term digital preservation.
- They may need quick wins to sustain institutional support.
- Initial costs may be high, as contributors perceive high risks and duplicate effort to reduce them.

The relationship of IRs to open access

The open access movement is a significant force for change in the scholarly publishing industry. The literature that should be freely accessible online is that which scholars give to the world without expectation of payment. Primarily, this category encompasses their peer-reviewed journal articles, but it also includes any unreviewed preprints that they might wish to put online for comment or to alert colleagues to important research findings. There are many degrees and kinds of wider and easier access to this literature. By “open access” to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

To have open access to scholarly journal literature, we can follow two methods or strategies:

1. First, scholars need the tools and assistance to deposit their refereed journal articles in open electronic archives, a practice commonly called, self archiving. When these archives conform to standards created by the Open Archives Initiative, then search engines and other tools can treat the separate archives as one. Users then need not know which archives exist or where they are located in order to find and make use of their contents.
2. Second, scholars need the means to launch a new generation of journals committed to open access, and to help existing journals that elect to make the transition to open access. Because journal articles should be disseminated as widely as possible, these new journals will no longer invoke copyright to restrict access to and use of the material they publish. Instead they will use copyright and other tools to ensure permanent open access to all the articles they publish. Because price is a barrier to access, these new journals will not charge subscription or access fees, and will turn to other methods for covering their expenses.

According to the *Directory of Open Access Journals (DOAJ)* there are over 1,514 open access journals as of April 4, 2005, with 43 of those journals having been added in the last 30 days.

We define open access journals as journals that use a funding model that does not charge readers or their institutions for access. We can also take the right of “users to read, download, copy, distribute, print, search, or link to the full texts of these articles” as mandatory for a journal to be included in the directory. The journal should offer open access to their content without delay. Free user registration online is accepted.

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There are a few major open access journal publishers (e.g. BioMed Central, the Public Library of Science, and SciELO), many journals are published by scholars and a wide variety of organizations, such as universities (and their subunits), research institutes, libraries, and professional associations. While not yet common, some e-journals are being published in the context of IRs (e.g. e-journals in the University of California's eScholarship repository), and there is no reason that open access journals could not be published in the same way.

We believe the most promising way to achieve the goal of Open Access is for institutions to introduce policies requiring that published articles be self-archived. It is they and their researchers who will benefit from maximizing research impact and eliminating the costs of lost impact. This should motivate authors and their institutions to create and fill more archives – 100 universities worldwide already have.

The role of librarians in the development and promotion of institutional repositories is important. It is presented as a continuation of their existing functions of acquiring, organising and making readily available the resources needed by academic staff and students. Library staff is collaborating with IT staff and academics to disseminate scholarly material and learning objects emanating from their institutions. The benefits to institutions and their staffs are also reported. The skills needed by library staff are outlined, as well as the pitfalls and problems they may face in persuading academic staff of the virtues of institutional repositories.

Libraries not only acquire electronic resources, but also create them. Libraries are being funded to digitize valuable parts of their special collections, both to preserve the originals and to make the content more readily accessible. Librarians are increasingly working with academic colleagues to provide online content for research, learning and teaching. Providing access to digital content is an essential prerequisite for institutions establishing and offering flexible online learning delivery.

## **6. Open source softwares**

Below mentioned are a few of open source softwares:

Dspace has been developed by Hewlett and Packard and MIT to offer IR services. It offers interoperability via OAI-MHP (Open Archive Initiative) – Metadata Harvesting Protocol – a software standard that allows specialised search engines to gather article metadata from compliant websites) and built in support for Dublin Core metadata.

Fedora (Flexible Extensible Digital Object and Repository Architecture) funded by Andrew Mellon Foundation Project at the University of Virginia ([www.fedora.info/](http://www.fedora.info/)). It is designed to be a foundation upon which full-featured institutional repositories and other interoperable web-based digital libraries can be built.

Caltech Collection of Open Digital Archives (CODA – <http://library.caltech.edu/digital/>). Given that one key aim of IRs is to make management easier for users, it is likely that the application service provider (ASP) model will be relevant. It may speed institutional development, allow experimentation and drive innovation, and foster integration with commercial services.

The ebrary Institutional Repository Pilot Program ([www.ebrary.com/libraries/ir.jsp](http://www.ebrary.com/libraries/ir.jsp)), for example, provides a hosted solution for ebrary customers, offering critical researcher-led benefits. However, for such a model to work, institutions would need to trust their service providers to maintain service indefinitely, or at least to be able to transfer the repository elsewhere if they cease to do so, and it is therefore likely that interoperable repositories are needed before such options are widely adopted. Such interoperability would also strengthen the long-term security of repositories generally, beyond any federation using a single technical platform.

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An e-print archive is a collection of digital documents, which would include a private digital library or a proprietary electronic journal with restricted access. E-print repositories have been designed to encourage authors to submit their own documents. This works well in established repositories, for example, [www.arxiv.org/](http://www.arxiv.org/) The [eprints.org](http://eprints.org) software has a self-deposit facility. While the process is straightforward, to establish critical mass, submission can be undertaken by library staff on behalf of their academic colleagues.

## 7. Librarians and IRs

Institutional librarians are well placed to exercise leadership in information management, based on their print and digital content management expertise. Libraries are there to facilitate access to scholarly information. Traditionally, academic library staff have acquired, organised, and disseminated scholarly information. The role of librarians is now expanding to include managing electronic scholarly products and participating in the evolving scholarly communication process.

It is said that establishing institutional repositories is recognition that the intellectual life and scholarship of universities will increasingly be represented, documented, and shared in digital form. It has been a logical step for the institutional libraries to take the lead in ensuring availability and preservation of research output. In many institutions, such as University of Melbourne, the Australian National University, University of Nottingham, and University of Glasgow, library staffs are taking the initiative to establish e-print repositories compliant with international standards. In these universities and many others, the software employed is [eprints.org](http://eprints.org), emanating from the University of Southampton.

Librarians' involvement includes developing content management policies, deciding on what metadata to store and present, crafting author permission and copyright agreements, creating document submission instructions, training staff and authors in using the software to submit content, and marketing the repository concept to prospective depositors. Librarians should possess the technical skills to assist authors to deposit research material in the repository. They should develop expertise in dealing with a wide variety of formats. In addition to digital textual resources, librarians have to handle formats such as statistical, mapping, graphical, sound, and moving images. In addition, they have to improve the skills and expertise in the areas of communication, preservation, metadata handling, advocacy and promotion that make them ideal managers of institutional repositories.

## 8. Role of Librarians

Librarians can play a significant role in planning, establishing, and supporting IRs. Here is a partial list of some of the possible activities that they may engage in. Helping to create sensible IR policies and procedures and to provide feedback about how they work in practice.

- Assisting in designing the IR user interface so that it is clear, easy to use, and effective.
- Helping to identify current self-archiving activity on campus to aid the content recruitment effort.
- Acting as agents by promoting the IR to faculty and graduate students in their subject areas.
- Informing faculty and graduate students about Creative Commons licensing options and publisher e-print policies.
- Depositing digital materials for faculty in their subject areas if such assistance is desired.
- Participating in the creation of IR metadata, such as local controlled vocabularies (e.g. subject categories for IR documents).

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- Preparing web-based and paper documents that explain and promote the IR and advocate scholarly publishing reform.
  - Training users in IR deposit and searching procedures.
  - Assisting local and remote users with IR utilization, answering questions about IR policies and procedures, and using the IR to answer reference questions.

Unless you can quickly prove the value of an IR, the organization's long-term commitment to the project may begin to wane. The best way to demonstrate the enduring value of the IR and to ensure its long-term survival is to quickly populate it.

The challenge, ultimately will not be the technical implementation of an e-prints service but rather the cultural change necessary for it to become embedded and commonplace in the activities of the institution.

Librarians are a library's eyes and ears. They understand user needs and perceptions. They know what is working and what is not. When they act as subject selectors, they are the library's primary liaison with faculty in their subject areas and its most visible representatives. They know how to help, inform, persuade, and teach users. For an IR to succeed, it is essential that they be involved in its planning, implementation, and operation.

## 9. Conclusion

Faculties retire, and their publication pages vanish. As IRs become more prevalent, departmental/unit archives and institutional e-print repositories may fold as digital material migrates to the IRs. Funding agencies may decide to stop supporting disciplinary archives with generous grants, or the individuals or organizations that offer them may lose interest. Once established as part of the institutional mission, IRs will persist and, while it is not impossible that they would cease operation, institutional inertia favors their continuation.

As digital resources are now commonplace in academic institutions, their management and accessibility form major responsibilities for librarians. Acquiring, creating, and making available electronic resources are an extension of a library role already well established for print materials. Libraries have traditionally managed the key academic information resources of institutions. In the short term, librarians should be active in installing open source servers smoothing the path for academics to contribute to them. A newer and growing role is management of an institution's intellectual capital, including involvement with other institutional stakeholders in content management systems, virtual learning environments and knowledge management systems. Librarians involved in IR projects have reported that the effort and organisational costs required to address repository policy, content management, and promotion to academic staff dwarf the technical implementation effort. The challenge for librarians will not be the technical implementation of an e-prints service but effecting the cultural change necessary for it to become an integral part of the activities of the institution. Although the future shape of scholarly communication remains unclear, what is clear is that library and information professionals have key roles to play.

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