United Nations
Educational, Scientific and
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2

Open Access
Infrastructure

Open Access for Library Schools

United Nations
Educational, Scientific and
Cultural Organization

Open Access Infrastructure

Module

2

Open Access Infrastructure

Published in 2015 by the United Nations Educational, Scientific and Cultural Organization, 7, place de Fontenoy, 75352 Paris 07 SP, France

ISBN 978-92-3-100075-1

Cover design by The Commonwealth Educational Media Centre for Asia (CEMCA)
Printed in PDF

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MODULE INTRODUCTION

Open access means free and unhindered access to scholarly research and other publications by anyone who has access to the Internet. An initiative of the 21st century (Budapest Open Access Initiative (BOAI)) open access is taken as an economic model made possible by the global information networks. But its antecedents can easily be seen in the print era. Many missions, both diplomatic and religious, NGOs concerned with social welfare, environmental protection and some political/ideological groups not only distribute their publications free of cost, including periodicals, but also encourage readers to copy, distribute or republish the matter without permission only by acknowledging the author and the source.

But its e-avatar focuses on research and academic literature which is a consequence of needs of new economic models of research mostly funded by Government or its agencies. Though the number of research journals has increased constantly but the libraries have always reeled under the budget cuts. Price of journals and other research publications increased manifold due to increase in production cost and high profit margins of publishers. For scholars, academicians and research institutions it seemed an exploitation of sort by profiteer publishers to get the raw material (research output) free of cost, even by charging fee from the authors/researchers in the form of per page charges, and then to sell the same processed material in the form of publications at high prices. The underlying philosophy of OAI is that research benefits the entire humanity and should be available to all irrespective of their paying capacity. That is the only way to promote access to knowledge and its benefits to the society at large: public funded research should be freely available to public. Hence, the movement, aided by the information technology, got the momentum.

Initially the authors were wary of submitting their research to e- journals and treated them as impermanent and out of the main stream channels. They even doubted their quality and standards. Easy and inexpensive technology, availability of open source software and standards to launch e-journals tempted many unscrupulous and incompetent publishers and editors to enter the fray with the sole motive of making money. They had their way, but spoiled the credibility of the movement. To check such malpractices some publishers, organisations and editors have come together to frame guidelines for transparency and quality control in open access e-journals which have come to stay. Indeed open access e-journals have numerous advantages and better features. OA is not restricted to e-journals only. OA institutional repositories, e-books, education resources, open data, open software and standards, etc. are also part of this movement for which there is no looking back. Institutional repositories, may be subject, institution or form based, have many instant and long term benefits.

Launching an e-journal or knowledge repository is a project which needs meticulous planning in terms of its need, scope, technology standard, administration, legal issues, finances marketing and sustainability.

This module deals with open access resources of all types, their definition, nature, features, planning, executing, choosing appropriate technical standards and following set procedures and later maintenance for all parties involved i.e. host, sponsors, users and prospective content creators. Emphasis is on e - journals and e-repositories and of course emerging trends in the open access movement.

UNIT 1 OPEN ACCESS REPOSITORIES

Structure

1.0 INTRODUCTION

The Internet was originally created by US military (**ARPAnet**[1]) to share information between geographically separated research computers. Since its creation, several developments occurred, e.g. sending and receiving huge amounts of data between various clients and storing data in the cloud. Open Access was a result of the dissatisfaction of researchers with the price models of scientific publishers, and scientific publishers making huge profits from research funded by public finance to benefit all. The Internet opened up a whole new world and made Open Access possible. The ability to not only download information but also to upload information lead – amongst other reasons - to the development of software to provide and manage Open Access services. Open source software is synonym with Open Access, because of the shared principle of 'openness' and the benefits thereof. Read more about open source software from the Open Source Initiative[2].

Within an Open Access environment, content (whether digitally born or after being digitised) is submitted by the content creator, owner of the content or a third party with the necessary permissions to do so. The content can take any form, with the only condition that it is already in some form of digital format, preferably an open format. The Open Access software architecture has been

[1]http://www.cs.utexas.edu/users/chris/think/ARPANET/
[2]http://opensource.org/

designed to manage both full text content and metadata[3] (data about data). Basic services provided by this software include submission, retrieval, searching, and indexing. These systems usually also have an automated workflow, and an audit trail is kept of all actions during the various stages.

Implementing an Open Access service usually follows a need to make research openly accessible for all, aligned with the strategy of an organisation. It is recommended that a thorough needs analysis/assessment be conducted before proceeding with the implementation of an Open Access service. This should be followed by a proposal and/or business plan (incl. capacity planning), before it is finally implemented. Policies and procedures should be compiled, and the service should be regularly evaluated to establish whether it still addresses the changing needs of the user community.

1.1 LEARNING OUTCOMES

At the end of this unit, you are expected to be able to:

- Explain the concept of repositories;
- Identify the types of OA repositories;
- List Open Source repository software;
- Compare the features of some open source repository software;
- Carryout needs analysis for OA repository and list the features of OA repository software;
- Prepare a business plan for deployment of repository software; and
- Take appropriate steps to install and manage repositories.

1.2 OPEN ACCESS REPOSITORIES

There are mainly two routes to Open Access, namely the green and the gold routes. Open Access repositories are referred to as the green route to Open Access, while publishing in Open Access journals is referred to as the gold route to Open Access. Institutions such as universities and research organisations can implement either or both - not only to support Open Access, but also to preserve the digital research assets of the institution.
The three main categories of repositories are:

- Institutional repositories;
- Subject/discipline specific repositories; and
- Data repositories.

[3]http://en.wikipedia.org/wiki/Metadata

1.2.1 Institutional repositories

Clifford Lynch[4] (2003) coined the original description of an institutional repository in the following words:

"... a 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."

Institutional (digital) repositories can also be referred to as document servers enabling members of a specific research community to self-archive their research output and to make their research output available to the public without any access barriers. Since these repositories are institutional, content depends on the focus of the institution or organisation. A higher education institution conducting research across multiple disciplines can follow a multi-disciplinary approach, including research from different subject areas in a single repository. A repository can contain new research (e.g. theses/dissertations) as well as research previously published in a subscription journal only, provided that there is an agreement between the author, publisher and institution. Both the metadata (data about data) as well as the full text are indexed, and harvested by popular search engines, provided that open standards are used.

Examples of institutional repositories include:

- Virginia Tech University Digital Library and Archives[5]
- MIT Institutional Repository[6]
- University of Queensland UQ eSpace[7]

For more examples on multi-disciplinary institutional repositories, visit OpenDOAR[8].

1.2.2 Subject/discipline specific repositories

Subject/discipline specific repositories (SSOAR[9]) store and provide access to the scholarly output of a particular subject area, for example an individual discipline. It can be a subject repository within a specific institution, or it can collect discipline specific research across various institutions. Important German projects include PsyDok[10], a discipline-specific full-text server for (German-language) psychology, and **SSOAR**, an internationally-oriented social science full-text server. **CiteSeer**[11] contains academic and scientific

[4] http://scholarship.utm.edu/21/1/Lynch,_IRs.pdf
[5] http://scholar.lib.vt.edu/
[6] http://dspace.mit.edu/
[7] http://espace.library.uq.edu.au/
[8] http://www.opendoar.org/find.php
[9] http://www.ssoar.info/en/home/about-open-access/types-of-repositories.html
[10] http://psydok.sulb.uni-saarland.de/
[11] http://citeseerx.ist.psu.edu/index

papers primarily from computer and information science, while **arXiv**[12] contains scientific papers in the fields of
mathematics, physics, astronomy, computer science, quantitative biology, statistics, and quantitative finance.

For more examples on subject/discipline specific repositories, visitOpenDOAR.

1.2.3 Data repositories

Data repositories are based on the same principles as institutional and subject/discipline specific repositories, with the only exception that it focuses on providing access to datasets. These datasets can be subject specific or across disciplines. A dataset is a set of files containing both research data - usually numeric or encoded - and documentation sufficient to make the data re-usable. The documentation can refer to any digital files such as a codebook, technical or methodology report or user guide, which explain the research data's production, provenance, processing or interpretation (**University of Edinburgh**[13]**, 2013**). Nowadays scientific papers are often submitted to the institutional repository with the data attached to the paper. The same applies to theses and dissertations, especially where it is an institutional requirement that the data be preserved for future reference, should it be questioned following the publication of the thesis/dissertation on an institutional repository.

Examples of data repositories:

- Edinburgh DataShare
- National Geographic Data Center
- Dryad

1.3 OPEN SOURCE REPOSITORY SOFTWARE

According to the Budapest Open Access Initiative[14]planning the implementation of an institutional repository entails policy, legal, educational, cultural, and technical components, most of which are interrelated and each of which must be satisfactorily addressed for the repository to succeed. Selecting a software system that best satisfies the needs of an institution is just one facet of institutional repository implementation planning. In the next session types of repository software will be discussed, as well as the criteria according to which repository software can be evaluated.

[12]http://xstructure.inr.ac.ru/
[13]http://www.ed.ac.uk/schools-departments/information-services/research-support/data-library/data-repository/definitions
[14]http://www.soros.org/openaccess/software

1.3.1 Repository software

There are mainly two different categories of repository software:

- Open Source software, e.g. DSpace, Fedora, EPrints; and
- Hosted solutions, e.g. Digital Commons, SimpleDL, ContentDM, DSpaceDirect.

As indicated previously, open source software (OSS) is synonymous with Open Access. OSS offers many benefits, incl.:

- It promotes collaboration and knowledge sharing amongst communities;
- All participants benefit, and not only the vendor;
- The product belongs to all and lots of support is available from the OSS community;
- No marketing is involved, therefore there is no salesman involved selling the product only focusing on the positive features, and not the limitations;
- With OSS what you see is what you get;
- OSS is flexible, its source code is open, and can be customized to be interoperable with other software at an institution;
- It is open for scrutiny, and can be installed and tested before taking a final decision;
- It can be implemented by institutions with minimal resources; and
- World standards and open standards are used, which makes it a favorable choice.

1.3.2 Criteria for the evaluation of an institutional repository

Software is continuously upgraded and enhanced, and new functionalities are added to meet the needs of the user community. A decision to use a specific software system/platform can be based on a literature survey, or based on an evaluation following the installation of the various software systems on a test server. This will depend on the expertise and capacity within an institution. When making a decision on which software to use, the needs of the user community should be matched with the functionality of the software. Although different communities might have different needs, the following criteria from the Open Society Institute[15] (2004) can be used as a guideline when conducting an evaluation of available software:

- Technical specifications
- Repository and system administration
- Content management
- Dissemination
- Archiving
- System maintenance

[15] http://www.budapestopenaccessinitiative.org/pdf/OSI_Guide_to_IR_Software_v3.pdf

Fay[16] (2010) compared three repository software systems based on five functional areas. The three systems were Fedora, Eprints and DSpace. The functional areas evaluated include:

- Data model: What kinds of digital objects can be submitted? Will configuration be required?
- Ingest, Data: Does it support flexible human- and machine-ingest? Does the functionality exist to conduct digital object management and administration operations? Can workflows be customized?
- Descriptive Information (Metadata): Does system support extensible metadata schemas, also for descriptive, technical, preservation and format-specific metadata? Is the metadata OAI-PMH compliant? Are independent, persistent and human-readable identifiers assigned?
- Storage: Are digital objects stored independent of the repository, which is preferred for preservation purposes?
- Access: Does the system come with an out-of-the box interface? Is access to content at granular level controlled? Which authentication system/s is used?

Castagné[17] (2013) conducted and reported on a more recent environmental scan of DSpace, EPrints, Digital Commons and Fedora Commons. These packages were selected based on their ROAR statistics and overall suitability for a large research library. Installation/administration processes (incl. metadata, interoperability), content management (incl. embargoes, versioning, preservation, statistics, file formats, batch importing, user interface, search) and support were evaluated.

There is no such thing as a perfect system, and the choice will all depend on the available institutional resources in the end. Although not the ideal, it would be possible to migrate from one system to anothershould it become necessary, since open standards are used and open source systems (OSS) are compatible with one another. The following table gives an indication of the popularity of repository software systems (November 2013):

Table 1: Number of repository instances according to software

	DSpace http://www.dspace.org/	**EPrints http://www.eprints.org/**	**Digital Commons http://digitalcommons.bepress.com/**
OpenDOAR http://www.opendoar.org/	1 049 instances	369 instances	116 instances
ROAR http://roar.eprints.org/	1 414 instances	517 instances	187 instances

[16] http://www.ariadne.ac.uk/issue64/fay

[17] http://circle.ubc.ca/bitstream/handle/2429/44812/Castagne_Michel_LIBR596_IR_comparison_2013.pdf?sequence=1

1.3.3 Comparison of repository software

Depending on the needs analysis, an evaluation checklist with criteria can be compiled to evaluate available software that will best address the needs of a specific user community. Various studies have been conducted on available software and functionalities, e.g. **London School of Economics and Political Science** (2010), **University of York** (2008), **Castagné** (2013) **Open Society Institute** (2004), and the Repositories Support Project[18] (2010). Because technology rapidly develops, the studies conducted only provide a guideline. For the most recent specifications on the various systems, the web pages for the individual systems should be visited.

The decision to use a specific system can be based on a literature survey only, or based on results of an evaluation after the software has been installed within a test environment. If it is not possible to install the software, the demo versions can be accessed and tested online.

The Repositories Support Project (RSP), a 7 year JISC-funded initiative contributing to building repository capacity, knowledge and skills within UK higher education institutions released a detailed study of comparison of repository software[19]. We suggest you to download and review the list[20]. Recently UNESCO also released a study comparing institutional repository software. The comparison is divided into twelve categories to help librarians identify the features that are most important to building a successful institutional repository program at their institution. The criteria include: infrastructure, front-end design, content organization and control, content discovery, publication tools, reporting, multimedia, social features and notification, interoperability, authentication, accessibility, and preservation. The study[21] covered five software: Digital Commons, DSpace, Fedora, EPrint, and Islandora.

1.4 DEPLOYMENT AND IMPLEMENTATION

To successfully deploy and implement an institutional repository, certain planning needs to be done. The following provides a guideline on typical processes and documentation that needs to be in place, although the requirements might differ from one institution to another.

1.4.1 Needs assessment (analysis)

To have a comprehensive understanding of the current practices, expectations and needs of a research community and the level of importance of the various needs, a thorough needs analysis has to be conducted. This needs analysis can be in the form of a checklist. Individual researchers can be interviewed, or groups of researchers. Also take into account the overall needs and strategy of the institution. The **LEADIRS Workbook**[22] by Barton and Waters (2004, p.

[18] http://www.rsp.ac.uk
[19] http://www.rsp.ac.uk/start/software-survey/results-2010/
[20] http://www.rsp.ac.uk/documents/Repository-Software-Survey-2010-11.pdf
[21] http://unesdoc.unesco.org/images/0022/002271/227115E.pdf
[22] http://dspace.mit.edu/bitstream/handle/1721.1/26698/Barton_2004_Creating.pdf;j

52 – 56) contains an example needs assessment with sample questions, which can be customised and used as supplement to survey an institutions' researchers about institutional repository plans. Below the sample needs assessment adapted from the **LEADIRS Workbook** by Barton and Waters (2004, p. 52 – 56).

Sample Needs Assessment

Source:

1. Barton, MR & Waters, MM 2004, **Creating an Institutional Repository: LEADIRS Workbook**.

Implementation Planning Team Survey	
What kinds of content will we accept?	
Who wants/needs to deposit content in the repository?	
Who will provide metadata?	
What will be the service's mission?	
Who will be the key users?	
Who are the key stakeholders we should include in our planning?	
What services would we offer if we had unlimited resources?	
What can we afford to offer?	
Will we charge for our services? (free or fee-based)	
What responsibilities will the library bear versus the content community?	
What are our top service priorities?	
What are the short-term priorities and long-term priorities?	
How will we organize our content? According to institutional structure/ subjects/ CoP?	
How are scholarly works currently published or stored on campus?	
What IT resources are available on campus?	
What are academic perceptions of the issues and problems of managing digital materials?	

Academic Survey	
Which faculty or department are you affiliated with at the university?	
How long have you been at the university?	
Are you a tenured academic?	
How important to you are the following statements about the benefits offered by an institutional repository? • Make preprint versions of my research available to a worldwide audience. • Make post print versions of my research available to a worldwide audience. • Make my research available faster than the traditional publishing process. • Make available types of materials that have not been made available through the traditional publishing process, including large datasets and rich media formats such as audio, video, and graphic images. • Make my research available with very little effort on my part and without my having to maintain a website of my own. • Provide long-term preservation of my digital research materials, also after I have left the institution. • Make it easy for other people to search for and locate my work. • Allow me to search for the most current findings of my colleagues throughout the university. • Preserve the research of the university in a convenient, central place.	
What digital formats do you use to create your research materials, conference materials, or other scholarly communication? • Data formats • Source code • Binary formats • BinHex format • Postscript formats • Video formats • Graphical image formats • Audio formats • Text formats • Page description formats • Microsoft Office Suite formats	

Open Access Infrastructure	• Other (specify)	
	Which formats would you likely submit to an institutional repository? • Data formats • Source code • Binary formats • BinHex format • Postscript formats • Video formats • Graphical image formats • Audio formats • Text formats • Page description formats • Microsoft Office Suite formats • Other (specify)	
	If you distribute preprint articles, how do you distribute them? • Post them to my own website. • Post them to my department's website. • Post them to a discipline-specific preprint site. • Send them out by email. • Mail out paper copies. • Upload it to Research Gate • Upload it to an international subject repository • Other (specify)	
	How many peer-reviewed articles, theses/dissertations, conference papers, datasets, or other types of scholarly communication do you typically author or co-author annually? • 0-1 per year • 2-4 per year • 5-7 per year • 8-10 per year • Greater than 10 per year	
	Which of the following typically apply when you submit an article or other work for publication? (Select up to three of the most common requirements you have.) • I surrender the copyright of all submitted materials to the publisher. • I pay a flat fee to submit materials. • I am required to pay page charges. • Neither the article nor any part of its essential substance, tables, or figures may be published or submitted elsewhere before submission to the publisher. • Preprints or post prints may be posted on	

recognized preprint/postprint servers if the server is identified to the editor upon submission of the paper, or with other minor restrictions. • I retain the right to post the final work on the web. • I retain the right to use the published materials in the courses I teach. • I don't typically get engaged in the submission process, so I am unfamiliar with its requirements. • Other (specify)	
Overall, how interested are you in using an institutional repository when it becomes available at this university? • Extremely interested • Somewhat interested • Neither interested nor uninterested • Not very interested • Not at all interested	
My concerns about submitting to an institutional repository include: (Select your top three concerns.) • I worry it might constitute prior publication and prevent me from submitting my work to journals. • I am hesitant to submit my work to a repository that does not have a formal review policy or other quality control process. • I prefer that only my formally published works be available for public consumption. • I am hesitant to assign distribution rights for my scholarly works to the university. • I would be worried about the risk to the patentability of my ideas. • I am concerned that works submitted to an institutional repository will not have citation value and will not count towards tenure. • I am uncomfortable using electronic resources such as word processors, spreadsheets, the Internet, and email. • I already submit to a preprint/psotprint server. • Other (specify)	

Open Access Infrastructure

The university library is considering expanding its basic institutional repository service to include some custom and consultative services. Please indicate your interest in using the following services:

Personalized information services	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Customized reporting services	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Publishing services	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Digital conversion services	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Reformatting services	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Reformatting consulting	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Collection administrative services	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Metadata consulting	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Metadata services	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use
Batch import services	Would not use	Probably would not use	Might or might not use	Probably would use	Definitely would use

Who in your department typically makes the purchasing decision for services such as those listed in the question above? • Individual academics • Head of the lab, center, or department • Department administrative officer • Other (specify)	
How do you get most of your information about university programmes or initiatives? • University newsletters • Student newsletters • University website • Faculty newsletters • Departmental newsletters • Local newspaper • University mailing lists (specify) • Other (specify)	

1.4.2 Business Case (Plan)

Once a need for an institutional repository has been established, and what it is researchers might expect from it, the service needs to be described. According to the **Open Access Scholarly Information Sourcebook** (Swan & Chan, 2009), the case for a repository must be made to the institution or community that will own and sustain it. In justifying a repository it is critical to work out a case that best aligns with the priorities of the institution. For research-based institutions this means focusing on the benefits to the institution in having a tool that can increase the usage and impact of its research effort, maximise the visibility of its outputs and provide a management information system for monitoring and assessing the research carried out in the institution. In countries that have a formal national research assessment scheme, institutional repositories will be a boon to collecting data and compiling returns and a case can be made based on this issue. A carefully prepared case to senior management will highlight the appropriate advantages of the repository to the institution, will detail expected expenditure over a number of years, and will emphasise that the payoff is not measured in financial terms.

Please be advised that the following business plan is a sample only, and that it needs to be updated with the most recent information from time to time. Where indicated, please provide own text.

Sample Business Plan (Business Case)

Cover Page*(to be compiled)*

Document History Page*(to be compiled)*

Contents Page*(to be compiled)*

Executive Summary The University of X institutional repository is a Library and Information Service initiative. The library has identified the successful implementation of this repository as part of its objectives in its strategic plan for the period 2010 to 2015. This library strategic plan has been aligned with the overall University of X strategy, and the repository will contribute to the library supporting the University's research strategy. According to Lynch (2003) an institutional repository offers a set of services to the members of a community (University of X Community), for the management and dissemination of digital academic/research materials (excluding work of administrative or commercial nature, work in progress) donated to or created by the institution and its community members. The set of services includes the collection, storage and preservation in digital format, and retrieval of items submitted to the institutional repository. In addition to centrally preserve all intellectual output by researchers at the University, this repository will also help improve the visibility, usage and impact of research conducted by University of X researchers on the world out there. DSpace™ open source software will be used for the implementation of this repository.

The *Director: Information Technology and Communication* is responsible for the development and implementation of the library strategy, including the institutional repository. The *Institutional Repository Manager* and the *Institutional Repository*

Systems Engineer will be responsible for the research, development, implementation and maintenance of the institutional repository.

1. ABOUT THE UNIVERSITY OF X

Being an internationally recognised teaching, learning and research intensive university is central to the University of X's strategic plan. The University is currently considered to be one of the leading institutions of higher education in the country.

The mission of the University of X is to create and sustain an environment in which knowledge can be generated, shared and applied to the benefit of the community. According to Prof. X, Vice-Rector (Research) an essential part of this mission is underpinned by the research activities of the University. The output of research at the University of X enriches the body of knowledge, informs the content of the curriculum and provides the scientific basis for novel applications and services that benefit the wider community.

In the annual report for 2008 Prof. X stresses that research output also helps to support the vision of the University in its endeavour to be an academic institution of excellence by contributing towards the building of the scientific, technological and intellectual capacity of Africa and by being an active role player in the development of the South African society.

To further strengthen its position as a premier research institution and to ensure future success, the University of X aligned the research activities with the key development themes to which the University has committed itself. Within the research community it has been recognised that the following themes provide a broad framework for structuring research activities:

1) Consolidating democracy and ensuring regional peace and security.
2) Eradicating endemic poverty.
3) Contributing to human dignity and health.
4) Ensuring environmental and resource sustainability.
5) Maintaining the competitiveness of industry.

The research activities clustered in this broad framework are informed by a solid foundation of fundamental scientific research. The Library and Information Service is one of four divisions that help provide an overarching institutional service to the research community at the University (Prof. X, 2008).

1.2 LIBRARY AND INFORMATION SERVICE

According to the 2008 annual report of the University, the library provides an essential service to the research community of the University of X. Recognition of the library's central role and pivotal importance in academic success was affirmed with the approval of the Overarching Strategic Plan project Access to Electronic Resources (Prof. X, 2008).

The library has as its core function the provision of a range of support services and products aimed at promoting research through the support of the individuals who carry it out. A number of strategic actions and plans were identified for 2010, one

strategic goal being that of "Support, develop and contribute to high-level scholarly publication output".

The main **action** to achieve the above strategic objective is the establishment of an e-Repository Research system (for primary data, research output, Open-Access publication-based content, digitised special collections, and rich media content types) to ingest, preserve and disseminate the intellectual output of the institution.

The following **action plans** need to be conducted to achieve the abovementioned strategic goal:

1) *Map the institutional digital landscape* by: i) conducting a campus-wide audit of existing digital collections, resources, potential projects and services; ii) identify analogue materials that may need to be converted to digital format.
2) *Implement digital services and programs* by: i) establishing library-based service procedures and workflows; ii) establishing internal and external partnerships.
3) *Establish protocols and policy* for the preservation of digital assets.
4) *Market the repository* and provide outreach and education.
5) *Develop an assessment and evaluation plan* which will enable user feedback on the system and system content.

Achievements of the previous library strategy include the following:

1) Mandatory policy for the online submission of all theses and dissertations.
2) Implementation of a workflow between the Library and the Office of the Registrar.

Governance

- The *Director: Information Technology and Communication* is responsible for the development and implementation of the strategy and the repository (Dr X).
- The *Institutional Repository Manager* (X) and the *Institutional Repository Systems Engineer* (X) are responsible for the research, development, implementation & maintenance of the repository system.

2. AN INSTITUTIONAL REPOSITORY SERVICE FOR THE UNIVERSITY OF X

2.1 ABOUT INSTITUTIONAL REPOSITORIES

More and more institutions worldwide are starting to implement digital institutional repositories to capture, store, index, preserve and redistribute a university's scholarly research in digital formats. Scholarly assets can include both digitally born and non-digitally born material of an organization. Currently there are approximately 3 500+ repositories internationally, of which3 565 on the Registry of Open Access Repositories (ROAR at http://roar.eprints.org/), 2 527 onopenDOAR (http://www.opendoar.org/) and 1 650 ranked by Webometrics (http://repositories.webometrics.info/en/world). Of these X are in *(to be completed)* country.

A digital repository offers many advantages. In addition to preserving intellectual output in digital format for years to come, it can also help improve the visibility, usage and impact of research conducted at an institution worldwide.

According to Lynch (2003) an institutional repository offers a set of services to the members of a community (*X Community*), for the management and dissemination of digital academic/research materials (excluding work of administrative or commercial nature) donated to or created by the institution and its community members. The set of services includes the collection, storage and preservation in digital format, and retrieval of items submitted to the institutional repository. "It is most essentially an organisational commitment to the stewardship of these digital research materials, including long-term preservation where appropriate, as well as organisation and access or distribution" (Lynch 2003).

Universities and research libraries around the world use institutional repositories in many ways (Barton & Waters 2005):

- Scholarly communication
- Storing learning materials and courseware
- Electronic publishing
- Managing collections of research documents
- Preserving digital materials for the long term
- Adding to the university's prestige by showcasing its academic research
- Institutional leadership role for the library
- Knowledge management
- Research assessment
- Encouraging Open Access to scholarly research
- Housing digitized collections

2.2 ABOUT DSPACE™

DSpace™ (http://www.dspace.org) software will be used to implement the University of X repository, developed at MIT with support from Hewlett Packard and now supported by DuraSpace, which complies with the Open Archives Initiative (OAI); thus allowing articles to be easily discovered by web search engines, services and indexing tools.

The decision for using DSpace™ was made by the Library Management Team, under leadership of Dr X. Important role players that were involved in the decision-making process were:

- DrX (Senior Director: Library and Information Service)
- Dr X (Director: Information Technology and Communication)
- Mr X (Head: Library IT Division)

It was therefore a management decision.

The decision to use DSpace™ was based on the following:

- The software complied with University of X functional requirements.

- The software complied with University of X technical architectural requirements.
- The DSpace™ interface provides for easy decentralised self-archiving by faculty, and organises the documents in logical, easily retrievable fashion.
- Each item in the repository will be assigned a unique persistent identifier, using the CNRI Handle System. The identifiers will be resolvable in perpetuity, and will remain valid even if content migrates to a new system. This allows documents in the repository to be properly and effectively cited in other research.

DSpace™ Availability

- Free, open source software
- Latest version: DSpace3.2. Every effort will be made to utilise the most recent software releases to ensure continuity and long term access.
- Distributed through the BSD open source license.
- Download at http://www.dspace.org/latest-release

DSpace™ Features

We decided on DSpace™ because of the following reasons:

- MIT designed the system in collaboration with the Hewlett-Packard Community between March 2000 and November 2002. It can therefore be regarded as highly reputable.
- The key aim of DSpace™ was and still is the long-term preservation of the intellectual output of researchers.
- It is easy to retrieve digital objects that have been submitted to DSpace™.
- Regarding scalability – DSpace™ can handle large volumes of data.
- It also supports full text searching, provided that the full text were created electronically or were OCR'ed after being digitised.
- There is a good separation between data and metadata.
- DSpace™ supports the Open Archives Initiative.
- With open source the code is available to any programmer to change or adapt as he/she wishes.
- DSpace™ allows for easy integration into the existing University of X Portal.
- It has a well-defined workflow, automatically generates e-mails and forward tasks to different role players in the workflow process.
- It uses the Lucene Search Engine, which is a simple, high-performance, powerful search engine.
- The structure supports the participation of faculties, departments, research centers and other units typical of a large institution such as the University of X.
- It conforms to the technical and functional requirements set by our Dept. of IT.
- Our Dept. of IT supports the use of open source products.
- When accessing DSpace™ via the portal the user gets authenticated against the LDAP server, using his/her campus login credentials or e-mail address to verify and allow the user to submit items (after being registered as a Submitter for a specific Collection). Browsing is open to the rest of the WWW Community, and a

user does not need to be authenticated to browse a Collection, except where access has been restricted to a selected group for reasons such as embargoes, confidentiality, patents.

- Distributed input from faculties and departments is possible and will be encouraged.
- Suitable platform for most academic digital objects.
- Quality control allows for review, editing and metadata editing of submitted items.
- Supports important metadata standards, e.g. Dublin Core.
- DSpace™ is OAI-PMH compliant.
- Java programming language is used.
- Metadata is stored in XML.
- Database used is PostgreSQL.
- Operating system used is Ubuntu 13.10.
- Security can be defined on various levels.
- A server is available at the University of X, Library and Information Service, IT Division.
- 1 000+ instances of DSpace™ are currently running worldwide, making it the most popular platform for preserving digital material.
- Persistent identifiers are assigned to each item (CNRI handle system).
- DSpace™ has the largest active community of users and developers worldwide.

A comprehensive evaluation has been conducted on open source institutional repositories funded by the JISC Foundation: *Repositories Software Survey November 2010*, online available (http://www.rsp.ac.uk/software/surveyresults).

DSpace™ Technical support

The following support is available:

- DSpace™ mailing lists
- LocalDSpace™ Community (X mailing list, hosted and maintained at the University of X, Library and Information Service)
- DSpace™ Wiki and Web Page (http://www.dspace.org/)
- Regular conferences are held
- Bug Report System
- Dedicated programmers
- International support and expertise is well established. See http://dspace.org/service-providers

2.3 MOTIVATION FOR OPEN SOURCE SOFTWARE

From the literature it is clear that open source is gaining momentum amongst the higher education community nationally and internationally. “Open source software is also finding a home in the government arena. Following Cabinet's ratification of an open source strategy for South Africa earlier this year *[i.e. 2005]*, a range of projects

have been initiated by government, in particular the Department of Public Service and Administration (DPSA). For example the DPSA, together with the CSIR, earlier this year initiated a project to develop an open source corruption management system. Government also runs its wide area network using primarily open source software. The Centre for Public Service Innovation is also furthering the use of open source software through a number of projects designed to provide mobile access to government services in the under-serviced areas of the country. For a developing country like South Africa, OSS offers many benefits linked to social, economic, skills and business development." (http://www.go-opensource.org/)

The SA Government OSS strategy document is available at http://www.oss.gov.za/

The main reasons for using open source at the University of X are the following:

- It promotes collaboration and knowledge sharing between institutions who have the expertise, and the ones who do not have the expertise or necessary resources to start such a service. The University of X can contribute in this regard e.g. by hosting workshops and "scholarcamps".
- With open source software all participants benefit, and not only the vendor.
- The product belongs to all, and lots of support is available from the open source community.
- No marketing is involved – therefore there is not a clever salesman involved selling the product, only focusing on the stuff the program can do, and not the limitations.
- With open source, what you see is what you get.
- Open source software is flexible.
- It promotes openness and creative thinking.
- It is open for scrutiny.
- It is searchable and retrievable via the World Wide Web.
- It can be used by institutions with minimal resources.
- World standards and open standards are used, which makes it a very favorable choice. For long term sustainable support and digital preservation it is crucial that i) open systems based on open standards are used; ii) open digital formats based on open standards and formats/codecs are used; iii) formal relationships are established with support communities for open systems and software.

2.4 AN INSTITUTIONAL REPOSITORY FOR THE UNIVERSITY OF X

The institutional repository will be referred to as *X*, and will be a full text managed Open Access research repository.

The **purpose** of X will be to offer a suite of services for the collection and management of the digital output of the University and its partnership communities. In the development of this repository, the Library and Information Service will commit itself to create a centralised forum for the collection, preservation and dissemination of the intellectual output and to share that intellectual output, provided that copyright has been cleared and the necessary permission has been obtained from copyright owners.

2.4.1 SERVICE MODEL

The following services will be offered to members of the University of X Community (adapted from the **LEADIRS Workbook** by Barton and Waters (2004):

Institutional Repository Services	Core service (free)	Premium service (fee-based)
Setting up the IR using DSpace	✔	
Setting up academic departments and other content communities in IR	✔	
Metadata consultation	✔	
Custom metadata creation	✔	
Training content submitters	✔	
User support for content submitters (troubleshooting etc.)	✔	
Document services • Scanning • OCR • Reformatting files		Only in-house. No capacity available.
Basic storage allocation	✔	
Extra storage space		✔
Batch import of data: • Historic collections • Newly digitised collections	✔	
User reporting (incl. statistics)	✔	
IT Systems management	✔	
Online help	✔	
Copyright & IP consultation	✔	
Managing the IR & individual Collections	✔	
Register with harvesters	✔	
Persistent handles	✔	
General consultation	✔	

2.4.2 SERVICE DEFINITION

Service Mission

The mission of the institutional repository service will be to:

- Increase the visibility, usage and impact of research by University of X researchers;
- Increase the profile of researchers and the University of X, by help impacting on their H-index, researcher-rating, and finally on the position of the University of X on the Shanghai Jiao Tong University's list of the world's top 500 universities;
- Create an institutional leadership role for the library;

- Showcase the university's research output;
- Capture and preserve all research output by members of the University of X;
- Provide vital services to academics;
- Help other South African libraries to meet the challenges of the digital realm;
- House digitised collections;
- Support the Open Access phenomenon.

Content to be accepted

The primary focus of X will be to collect, organise, preserve and disseminate the research output of the University of X. The supplementary foci will be to collect, organise, preserve and disseminate research output material and to manage such collections.

Primary research output that will be accepted includes:

- Research articles: pre-prints and post-prints
- Conference proceedings
- Chapters in books
- Books
- Theses (Masters)
- Dissertations (Doctoral)

Secondary research output that will be accepted includes:

- Images: Photos/Slides (paper and digital), Art & Cultural Objects, Moving images (animation, movies, videos, TV programmes), Still images (maps, paintings, drawings, plans, zoetropes)
- Sound: Podcasts, Vidcasts, Music, Composer's work, Interviews
- Special collections (incl. Africana material): Books, Pamphlets, Biographies, Diaries, Letters, Collections
- Technical reports
- Inaugural addresses
- Data sets
- Web articles
- Presentations
- University of X publications
- Events: Exhibitions, Conferences, Open days, Workshops, Open lectures, Seminars

The following will not be accepted:

- Material of administrative or temporarily nature
- Work in progress
- Items protected by copyright, where permission won't be granted

2.4.3 REPOSITORY STRUCTURE

A sectional structure will be applied, aligned with the structure of the University of X. The content will be presented/organised within different Top-level Communities (i.e. the Faculties), Sub-Communities within the Top-level Communities (i.e. the Departments), and Collections within the Sub-Communities (see 2.4.2 e.g. Research Articles, Theses, Dissertations, etc.)

Example:

Faculty of Economic and Management Sciences (Top-level Community)

Department of Accounting (Sub-Community)

Chapters in Books (Collection)

Conference Proceedings (Collection)

Dissertations (Collection)

Research Articles (Collection)

Theses (Collection)

Items will be submitted on Collection level.

MARKET ANALYSIS

This set of services will be delivered to the members of the University of X Community.

The *University of X Community* refers to:

- Present and future staff members of the Library and Information Service, University of X;
- Past, present and future academic staff at the University of X;
- Focus areas, faculties, centers, institutes and research divisions at the University of X.

The key users will be:

- Academics
- Library staff
- Students
- Administrators e.g. Division for Research Development/Research Office
- Internal Research Staff
- External Researchers

The key stakeholders will be:

- Academics
- Library staff
- Students

- Administrators e.g. Division for Research Development/Research Office/Registrars' Office/Intellectual Property Office/Central IT
- Internal Research Staff
- External Researchers

The following levels of involvement are foreseen by the parties involved:

- Self-archiving of research by departments.
- Digitisation of objects if not available in digital format.

Early adopters that have been identified to run a pilot program are:

- Scholarly publications (i.e. research articles) (All departments)
- Theses and Dissertations (All departments)

It is expected that many additional departments/individuals etc. may become aware of this service offering, and would then be interested in getting involved. These will be accommodated accordingly.

4. STRATEGIC CONTEXT

The development of the library strategy has been aligned with strategic developments on local, national and international levels. The following are important elements of this strategic context:

- The impact of the Internet and IT on the academic environment (http://books.nap.edu/books/030908640X/html/index.html)
- The emphasis on new ways of functioning within the academic information and knowledge environment, e.g. archiving, Open Access/alternative scientific communication, open source software, e-information resources, search engines, digital research, information literacy, knowledge management, cloud computing, new roles for faculty librarians, and the development of academic portals .
- Some national and regional institutions have taken various initiatives in the e-environment. Examples are: *(list examples of local repository initiatives).*
- The US/CSIR alliance within which the UP Dept of Library Services and the CSIR Information Service have developed an information partnership (SERA).
- The focus on education innovation at the University of X and other SA universities.
- The changing demographic composition of students and staff at the University of X, with accompanied changing IT and information literacy skills.
- The emphasis the new Department of Education funding framework puts on research output by universities.
- The University of X strategic framework.
- The University of X portal as official IT platform using open standards (Java and XML).

5. MARKETING

5.1 POTENTIAL AUDIENCES

This service will initially be marketed to the following:

- Library Management
- Library and Information Service staff
- Faculty Librarians
- Library Cataloguers
- University of X Marketing Division
- University of X Division for Research Development/Research Office
- Departments, Centres etc. on campus (Road show)
- Editors-in-chief
- University Management

5.2 MARKETING APPROACH: BOTTOM-UP

A bottom-Up approach will be followed when marketing this service to the University of X Community:

- A bottom-Up approach pitches the service to academics, staff, communities that publish on our university website, technical staff in departments, and groups dealing with publications, etc. In this approach, we will prove the need for an institutional repository before requesting support at a higher level.
- Get academics interested in preserving their work for the long-term.
- Tap our Library Advisory Committee to describe to their colleagues the benefits of using an institutional repository.
- Recognise that different departments have different cultures around scholarly communications, different digital needs.
- Look for academic acceptance in a wide range of disciplines, each with different cultures, and different publishing and digital needs.
- Approach academics who have publications on their departmental or faculty websites.
- Meet the editors, webmasters, and content managers on campus and present the service to them. They understand the challenges of online content management and preservation and can be great advocates for institutional repositories.
- Collaborate with other initiatives on campus for online content, e.g. Archives.

5.3 MARKETING COMMUNICATIONS PLAN

(Adapted from the **LEADIRS Workbook** by Barton and Waters (2004))

Institutional Repository Pre-and Post- Launch Events and Activities: January 2010 cont.				
Item	**Purpose**	**Person(s) Responsible**	**Target Audience**	**Date**
Electronic Mailing List	To frequently communicate IR and OA related info	*To be completed*	University of X Community	November 2009 cont.
Printed Brochures	General information about IR service	*To be completed*	University of X Community Visitors	November 2009 cont.
Social media: Online newsletter (blog), facebook profile, Twitter, Skype	News and alert service	*To be completed*	International	November 2009 cont.
Web Page	Provide background info and online support re IR	*To be completed*	International	May 2010 cont.
Help Wiki	Working space where all faq's and help info (incl. animated help tutorials) are documented	*To be completed*	University of X Community	Nov. 2009 cont.
All staff meeting	Raise staff awareness of OA and IR; answer questions	*To be completed*	All library staff, researchers and other interested parties on campus	Feb. 2010
Library Management demo	Build an understanding of the IR	*To be completed*	Library Management	May 2010
Library Business Plan Workshop	Get input from staff, involve	*To be completed*	Library Management	May 2010

	staff in compiling business plan		, Divisional Heads, Selected Faculty Librarians	
Library Advisory Board demo	Build an understanding of the IR	*To be completed*	Library Advisory Board	June 2010
Training Sessions: Metadata Editors	Give an overview and train early cataloguers on how to edit metadata	*To be completed*	Library cataloguers	January 2010 cont.
Training Sessions: Submitters	Give an overview and train early adopters on how to submit items	*To be completed*	University of X Community	January 2010 cont.
Training Sessions: Reviewers	Give an overview and train early adopters on how to submit items	*To be completed*	University of X Community	June 2010 cont.
Register with harvesters/directories/search engines	Increase visibility and usage of research output	*To be completed*	International	January 2010 cont.
Meetings Minutes of meetings available on Sharepoint	Monthly meetings to address IR issues on operational level	IR Implementation Team	IR Implementation Team	January 2010 cont.
IR Road Show	Visits to departments – contextualise IR	IR Manager & Faculty Librarian	Departments	November 2010 cont.

Institutional Repository Launch Event and Activities: Open Access Week 18-22 October 2010				
Item	**Purpose**	**Person(s) Responsible**	**Target Audience**	**Date**
1 day seminar	Invite OA leaders in SA and spark debate, inform	Marketing Team &IRImplementation Team	University of X Community	19 Oct.
Launch Event (cheese & wine, entertainment, release on plasma screen & play video clip)	Formal launch and celebration of work done re IR; announce IR officially	Library Management	University Management incl. deans, heads of departments, support services (e.g. IT, Research Office), invited guests	19 Oct.
Open Sessions	Give members opportunity for hands-on experience	IR Manager	University of X Community	18-22 Oct.
Exhibits in library, at faculties	Inform and create an awareness of IR on campus	Marketing Team	University of X Community	18-22 Oct.
Staff wear prominent OA pets/t-shirts	Demonstrate support of OA and IR; create awareness and spark interest	Marketing Team	University of X Community	18-22 Oct.
Plasma screens with video clips, ppt's etc.	Inform, demonstrate what has been done elsewhere in world	Marketing Team	University of X Community	18-22 Oct.
Spotlight on University home page	Advertise OA week and launch events; raise awareness of OA and IR	University Marketing Team	International	Sept./Oct. 2010
Spotlight on Library home page	Advertise OA week and launch events; raise awareness of OA and IR	Marketing Team	International	Sept./Oct. 2010
Articles in campus publications, campus mailing lists	Promote participation; raise awareness on campus	Marketing Team	Campus, Academics, Alumni	Sept./Oct. 2010

MARKETING BUDGET TO BE COMPLETED

6. MANAGEMENT & STAFFING (CAPACITY PLANNING)

6.1 GOVERNANCE

- The *Library Director: Information Technology and Communication* is responsible for the successful implementation of the repository (Dr X).
- The *Institutional Repository Manager* (X) and the *Institutional Repository Systems Engineer* (X) are responsible for the research, development, implementation & maintenance of the repository system.
- We will rely heavily on existing expertise on campus re digitisation, copyright, intellectual property, metadata and will need to develop expertise where none exists.

6.2 IR ROLES

Role	Staff Member	% Time Allocated
IR Manager (also User Support Manager)	X	100% Time
Systems Engineer (also IR IS & T Manager)	X	50% Time
Metadata Specialist	X	10% Time
Digitisation Specialist	X	10% Time
Reviewer & Copyright Specialist	X	50% Time
Collection Administrators	Faculty Librarians	10% Time
Reviewers	IR Management/Faculty Librarians	10% Time
Metadata Editors	Cataloguers	15% Time

6.3 ROLE DESCRIPTIONS (NOT PART OF FORMAL WORKFLOW)

6.3.1 IR MANAGER (ALSO USER SUPPORT MANAGER)

Reporting to the library's Director: Information Technology and Communication, the IR Manager has primary responsibility for managing the communication with and support of the institutional repository's users, and particularly those users adding content to the system. This position requires a knowledgeable, enthusiastic, and self-motivated individual.

Responsibilities

- Take primary responsibility for all aspects of the system's user management.
- Perform user training for library staff and content contributors.
- Provide expertise and assistance to the library's staff in their support of IR end - users.

- Coordinate and manage the definition and setup of new IR content groups, and coordinate and communicate with library subject specialists.
- Perform outreach to university community, including site visits to academics and open and online training sessions.
- Make recommendations on new functionality to IT based on feedback from academics, submitters, and library staff. Plan and implement usability tests.
- Work with marketing and public relations divisions to publicise the institutional repository service.
- Coordinate importing of historical collections with the System Engineer, including collection assessment, metadata consulting, conversion referral, and developing metadata crosswalks if necessary.
- Coordinate digitisation activities.
- Compile and provide consultation on policies, as well as issues related to intellectual property and sponsored research as they relate to the institutional repository service. Oversee implementation of these policies.
- Work on projects and teams with library and other groups at university who are closely aligned with IR services (such as the Intellectual Property Office, Research Office etc.).
- Develop marketing material, user documentation, help tools and communicate important information via social media tools and maintain the web site.

Qualifications

- Postgraduate degree in library science, or equivalent experience.
- Experience with using, and helping others in an academic setting to use web-based software.
- Extensive knowledge of library practices and goals, especially with regard to technology.
- Working knowledge of web-based publishing tools and practices (such as HTML).
- Excellent written and oral communication skills and interpersonal skills.
- Understanding of organisational and library mission and ability to communicate system mission and functionality clearly to key library staff and users at the university.
- Ability to identify opportunities for collaboration and integration.
- Excellent people skills.

Other experience desired

- Experience supporting complex library systems.
- Knowledge of the university community and research interests.

6.3.2 SYSTEMS ENGINEER (ALSO IR IS & T MANAGER)

To run an institutional repository system you need a technologist who can take primary responsibility for the technology. Reporting to the library's Head: IT

Open Access Infrastructure

Division, the Systems Engineer has primary responsibility for all aspects of the technical management of the institutional repository. The position requires a knowledgeable, enthusiastic, and self-motivated individual.

Responsibilities

- Hold primary responsibility for all aspects of the system's technical management.
- Coordinate related work by the Libraries' Systems Office and IS staff, including training.
- Contribute bug-fixes and other enhancements to the systems developer if applicable (for open source systems, primarily).
- Perform system monitoring, testing, debugging.
- Provide system administration.
- Monitor and upgrade utility programs and middleware.
- Develop approved system enhancements.
- Perform regular back-up's (disaster recovery).
- Manage hardware contracts and system administration tasks for IR servers, documenting operational issues.
- Participate in projects and teams working on activities related to the IR service.
- Oversee implementation of IR policies.

Experience

- Understanding of network (especially web) development issues
- Experience with Unix systems and basic system administration skills
- Ubuntu Linux Server Systems Administration
- Web 2.0 design with XML skills BASH programming skills
- SQL programming skills
- Java programming skills
- TCP/IP networking skills
- Familiarity with the LAMP stack
- Familiarity with the Java Tomcat webapp server

The incumbent should be able to demonstrate at least 2 years experience in all of the above.

Qualifications

The formal certification would be something with Computer Science or Information Science and helped by any Linux certification.

Also see: Capacity Building
http://wiki.lib.sun.ac.za/index.php/SUNScholar/Capacity_Building

Other experience desired

Experience with Open Source development projects and procedures by which source of a project is shared with the community (for open source projects only).

6.3.3 METADATA SPECIALIST

- Share knowledge and expertise on Dublin Core.
- Stay informed on international developments inmetadata.
- Provide metadata training.
- Keep the metadata policy updated.

6.3.4 DIGITISATION SPECIALIST

- Serve as knowledge expert for digitisation issues.
- Provide training.
- Digitise items on request.
- Keep the digitisation policy updated.
- Coordinate digitisation projects.

6.3.5 COPYRIGHT SPECIALIST

- Serve as knowledge expert for copyright issues.
- Provide training.
- Negotiate copyright clearance with copyright owners, and respond to queries from end-users.

6.3.6 COLLECTION ADMINISTRATORS (FACULTY LIBRARIANS)

- Plays an advocacy role and promote the IR amongst researchers.
- Identify possible new Collections, and marketing and training opportunities such as seminars, events etc.
- Liaise with departments for items to be submitted, assistance and support (Submitters).
- Subscribe to departmental Collections, and stay current on material submitted.
- Communicate IR-related issues to departments.

6.4 ROLE DESCRIPTIONS (PART OF FORMAL WORKFLOW)

6.4.1 SUBMITTER (RESEARCHER/FACULTY OFFICIAL/SECRETARY/POSTGRADUATE STUDENT/LIBRARY STAFF)

- Obtain copyright clearance prior to submission, if applicable.
- Digitise item, if applicable.
- Submit full text in the required digital format to the IR.
- Assign basic metadata to describe item as complete as possible.
- Attach full text file/s to item.

6.4.2 REVIEWER (SUBJECT EXPERT/FACULTY LIBRARIAN)

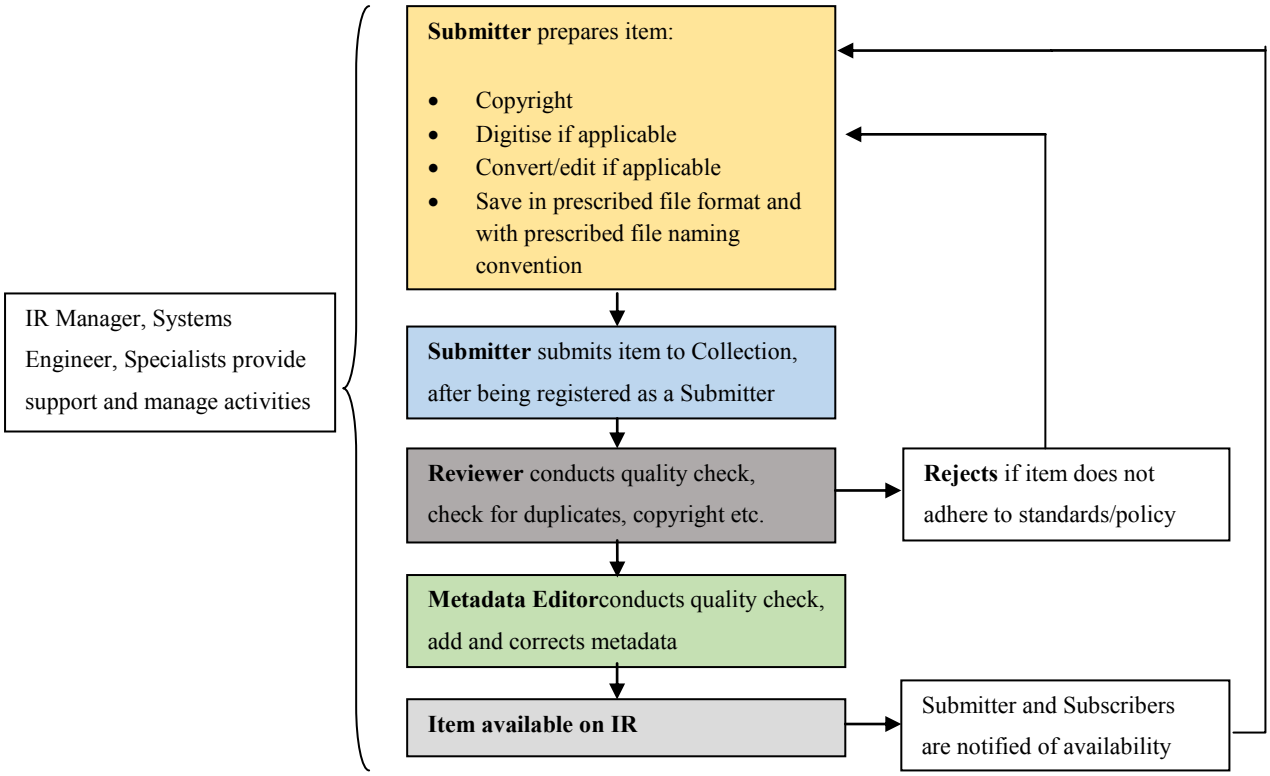
- Review all items submitted to Collection (e-Collection Development).
- Reject if not in line with policy (send explanation), or Approve. Rejection will stop submission.
- Edit baseline metadata.
- Eliminate duplicates.

- Verify quality of full text file/s.
- Provide user guidance.
- Liaise with Metadata Editors on normalisation of author name forms.

6.4.3 METADATA EDITOR (LIBRARY CATALOGUERS)

- Commit items to archive (repository).
- Can edit metadata of any item at any stage.
- Add LCSH's to certain items, as identified in the Metadata Policy.
- Add additional metadata where required.
- Conduct a spell check.
- Responsible for final quality check of metadata.

6.5 WORKFLOW



7. PROPOSED BUDGET

Following are some primary and initial budget issues that will be taken into account.
To be completed.

Human Resources			
Resource Type	**Man hours**	**Rate (R/hour)**	**Cost**
Systems Engineer (also IR IT & S Manager)	Semi-Full time	*To be completed*	
IR Manager (also User Support Manager)	Full time	*To be completed*	
Programmer	40 hours per annum	*To be completed*	
Metadata Specialist	Current Staff	N/A	N/A
Digitisation Specialist	Current Staff	N/A	N/A
Copyright Specialist & Reviewer	Current Staff	N/A	N/A
Cataloguers	Current Staff	N/A	N/A
Faculty Librarians	Current Staff	N/A	N/A

Hardware		
Resource Type	**Description**	**Cost**
DSpace Server	Dell - basic R210II rack server with minimum: 4 GB of Random Access Memory (RAM) 20 GB of Storage See: https://wiki.duraspace.org/display/DSPACE/EndUserFaq#EndUserFaq-WhatsortofhardwaredoesDSpacerequire?Whataboutsizingtheserver?HowmuchdiskspacedoIneed?=	*To be completed*
Scanners & accompanying software	*To be completed*	
Back-Up Hardware	*To be completed*	

Software			
Resource Type	**Description**	**Availability**	**Cost**
Dspace 3.2 (incl. Apache Web server, Tomcat Servlet engine, PostgreSQL relational database)	Platform Software	http://sourceforge.net/projects/dspace/files/DSpace%20Stable/3.2/	R 0,00
Linux (e.g. Ubuntu 13.10)	Operating System	http://www.ubuntu.com/download	R 0,00
CNRI Handle Server	Persistent handle server to resolve handles	http://www.handle.net/index.html For fees: http://www.handle.net/service_agreement.html	*To be completed*
****Additional Digitisation & Editing software**			
Resource Type	**Description**	**Availability**	**Cost**
Adobe Reader	Reads pdf documents	http://get.adobe.com/reader/	R 0,00
Adobe Acrobat (Professional)	Edits PDF documents i.e. minor editing to the text/ document pages or to save the document as TIFF or JPEG images, enables security settings etc. Use for OCR	http://www.adobe.com/products/acrobatpro.html	*To be completed*
TOTAL			*To be completed*

** Number of licenses depends on needs and availability of financial resources

8. RECOMMENDATIONS & IMPLEMENTATION

In order to implement and provide IR services with a reasonable chance of success, staff will be required. In implementing a new system and service, we anticipate the need for considerable effort to fine-tune both the technology and the service component in the first year. In addition, we expect considerable growth in the user base. We believe that trying to accomplish the set goals without dedicated staff would be very risky. If dedicated staff is not assigned, full responsibility for the technical support of the IR will fall to the Libraries' IS & T Unit, and the responsibility for user support will become the work of the Faculty Librarians throughout the library. While we do expect Faculty Librarians to be involved with users, we believe that relying totally on existing staff in various divisions would be far too fragmented for the launch of a very important new service that needs concentrated attention. In addition, it would seriously compromise other important public services initiatives by drawing away the time of staff members responsible for their planning and implementation. As the IR expands in scope and functionality, management and support efficiencies will have to increase simultaneously. Provision should be made in the library annual budget for developing the IR and additional staff.

The following policies will be developed in support of the IR:

- Overall IR Policy
- Digital Preservation Policy
- Digitisation Policy
- Metadata Policy
- Copyright Policy

Close collaboration with various divisions on campus are foreseen, e.g. IT dept., Research Office etc.

The IR Implementation Team will be responsible for negotiating further implementation of this business plan. This business plan will then be presented to a broader community for input, after which the final version will be presented to Library Management.

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Addendum A: Job descriptions– *To be completed*

Addendum B: Implementation timeline– *To be completed*

End of business plan.

1.5 SOFTWARE INSTALLATION, MANAGEMENT AND SERVICES

Once the business plan has been approved and a decision has been made on which repository software system will be used, the software can be installed. It is recommended that the software first be installed on a test server, then tested, next on a developmental server, then tested, and then finally on the production server, where it should also be subjected to a final test.The deployment, implementation, management and use of an institutional repository system are software specific, and it is not part of the scope of this tutorial to cover the installation procedures. The installation will have to be done by a technical person (hardware (systems administrator) and software technologist (programmer)) with the necessary expertise as indicated in the business plan.

The basic steps involved when installing the institutional repository software include:

Step 1: Decide on a URL for the repository

This name should be short and simple to remember, easy to type into documentation and good for marketing/branding. Ensure the name will never change and that it has a clean URL (Uniform Resource Locator) with no forward slash redirect. There are many thousands of websites and your repository will be one of them, so you are fighting for good web visibility and marketing mindshare by selecting a good URL. Whatever you decide, it is very important that you do not change it later for the purposes of preventing "linkrot" and web server "error 404, item not found" errors. Avoid using "dspace", "space", "ir", "repository" or e-something in the URL selection because the connotation is confusing to current users and will be for future users when DSpace no longer exists, you migrate to a different software system, or the "new" concept of an "institutional repository". Discuss the hostname selection with your repository manager/owner and campus network administrator first, before finalising on a name.

We recommend the following syntax for the institutional repository web address:

http://repositoryname.university.country

Example of a good URL: http://scholar.sun.ac.za

Example of a bad URL: http://sunscholar.sun.ac.za (‘’sun’’ repeated)

Step 2: Register with a handle server, e.g. CNRI handle server

According to the Handle System[23] web, handles are persistent identifiers for Internet resources. A handle does not have to be derived in any way from the entity that it names — the connection is maintained within the Handle System. This allows the name to persist over changes of location, ownership, and other

[23]http://www.handle.net/index.html

'current state' conditions. When a named resource moves from one location to another, e.g., from an old server to a new server, the handle is kept current by updating its value in the Handle System to reflect the new location.

The Handle System is designed to meet the following requirements for persistence:

Handles are:

- not based on any changeable attributes of the entity they identify (location, ownership, or any other attribute that may change over time);
- opaque, preferably 'dumb numbers' from which no potentially confusing meaning can be drawn, and from which no assumptions about ownership or use can be made;
- unique within the Handle System, avoiding collisions and referential uncertainty;
- easy to make user friendly, human-readable, cut-and-paste-able, and can be embedded, if needed;
- easily fit into common systems, e.g., URI specification.

Handle resolution is:

- reliable, using redundancy, with no single points of failure and resolution time fast enough never to appear broken;
- scalable, so that higher loads are easily managed with more computers;
- flexible and easily adapted to changing computing environments and new applications;
- trusted, with both resolution and administration built on proven trust methods;
- built on an open architecture that encourages the community of users to build applications on top of the infrastructure;
- transparent to users who don't need to know the infrastructure details.

A handle system *is not an end user system, and it is not off-the-shelf software*. It's an underlying infrastructure for identifying resources whose location and other basic information, e.g., ownership, needs to be updated from time to time (Handle System).Handle servers should be installed by system administrators. It is very much like installing a Web server. The server should be installed on a machine with an Internet presence, which should be outside an organization's firewall.

Although there are many handle servers on offering, the Handle System is used to explain the structure of the URL assigned to the following digital object:

Example: http://hdl.handle.net/10019.1/80915

http://hdl.handle.net – Standard to all services making use of the Handle System (CNRI) handle server.

10019.1 - Handle prefix assigned to an institutional repository after registering with the Handle System.

80915 – Digital object (unique id) identification assigned to an item in the repository, e.g. DSpace.

Step 3: Install the repository software

Installation is system specific, and software should be frequently upgraded to the most stable version to benefit from added functionalities and security features. Subscribe to software specific mailing lists to stay up to date on new developments, and visit bug report pages for information on bugs encountered. The basic vanilla interface can be customised to accommodate the institutional branding.

Table 3: Example repository software systems

	Download	Documentation	Mailing Lists	Bug Reports
DSpace 3.2	http://www.dspace.org/latest-release	https://wiki.duraspace.org/display/DSDOC3x/	http://www.dspace.org/Mailing-Lists	http://www.dspace.org/jira
EPrints 3.3.12	http://files.eprints.org/	http://wiki.eprints.org/w/EPrints_Manual	http://wiki.eprints.org/w/Contact	https://github.com/eprints/eprints
Digital Commons (Bepress)	Hosted solution http://www.bepress.com/	http://digitalcommons.bepress.com/subscriber_resources/	Not available	Not available

Step 4: Repository System Backup & Monitoring (Disaster Recovery Planning)

Whichever type of repository you use, it is vitally important that you maintain regular backups, and that you verify the backup. If the server fails, you may be able to access a recent version of your files, but without the repository all your history is lost forever. A backup can be done as follows:

- Perform a daily local backup.
- Copy/sync the local backup to two external backup servers (off site).

In addition to the backup it is important to monitor server performance and proactively identify possible problems, e.g. running out of server space, server is very slow, etc. In addition to a backup server use for example munin[24] to setup a monitor server.

[24]http://munin-monitoring.org/

Step 5: IR Policy

An IR Policy should be compiled to guide users of the system and implement decisions that were made. It is recommended that the following be addressed as part of an institutional repository policy:

- Scope of the IR and OA service
- Service definition
- IR Advisory Group: Terms of Reference (incl. scope, members etc.), Meetings
- IR User Group: Terms of Reference (incl. scope, members, etc.), Meetings
- Submissions Policy: Submitters, Content, File formats (open), Submission Fields
- Collection Policy: Definition of a Collection, Roles, Rights, Responsibilities, Workflow
- Rights, responsibilities & services offered by the Library and Information Service
- Rights, responsibilities & services offered by Central IT
- Rights, responsibilities & services offered by the University
- Licensing, Copyright, Privacy and Intellectual Property Issues (incl. publisher policies)
- Preservation Policy & Support
- Withdrawal Policy
- Workflow Policy
- Metadata Policy
- Authentication
- Service Level Agreements regarding System Availability & System Backup (disaster recovery)
- Memorandum of Understanding
- Communication

Step 6: OA Policy

To make progress in terms of Open Access, a solid Open Access policy should be compiled in a structured way. Open Access policies can be implemented on national level, international level, institutional level, and also by funders. A policy is a formal document which gives an institution the necessary leverage to negotiate with publishers in terms of making research openly accessible. When drafting an Open Access policy for an institution, also consult the Intellectual Property Policy and Research Policy of the institution, as well as agreements between researchers and the institution, e.g. academic staff work agreements. Where necessary, these policies and agreements need to be revised, and all should be aligned.

The following resource provides guidelines on developing an Open Access policy:

UNESCO Policy guidelines for the development and promotion of Open Access[25](2012)

For examples of existing Open Access Policies by other institutions, visit ROARMAP[26].

Step 7: Optimisation and registration with harvesters

For the repository content to be harvested/indexed by search engines and aggregating services, the software needs to be optimised and the repository needs to be registered with as many services possibly.

The Repositories Support Project provides some useful guidelines on optimisation, as well as the JISC Digital Repositories infoKit[27]. Also see How to facilitate Google crawling
Notes for open-access repository maintainers[28]by Peter Suber.

In brief some guidelines are:

- **Links:** For effective web crawling, it must be possible to visit every page and document in your repository just by clicking on hyperlinks – without ever needing to type in text or to use buttons.
- **Hierarchy:** Keep the hierarchy as simple as possible, so that crawlers don't need to go to deep to try and access the content. A *Browse* interface is recommended.
- **Sitemaps:** Implement sitemaps. A sitemap is a collection of XML files which, in their simplest form, can tell search engines what pages exist on a website, and when they were last updated. These files are typically built each night, and then compliant search engines can be 'pinged' (by visiting a specially formed URL) to inform them that the site map has been updated.
- **Robots:** Make sure the site does not block robots from crawling the repository.
- **Documents:** Do not break large documents up in smaller sizes. Keep all together as one document.
- **Cookies:** Do not request browsers to accept cookies.
- **Full text Open Access:** It is recommended that all content be available in full text and as Open Access.
- **Session-id's:** It is best to allow crawlers to access your sites without session-id's or arguments that track their path through the site.

Once the repository system has been optimized, you also need to register the repository with search engines and aggregating services (directories). These

[25]http://www.unesco.org/new/en/communication-and-information/resources/publications-and-communication-materials/publications/full-list/policy-guidelines-for-the-development-and-promotion-of-open-access/
[26]http://roarmap.eprints.org/
[27]http://tools.jiscinfonet.ac.uk/downloads/repositories/digital-repositories.pdf
[28]http://legacy.earlham.edu/~peters/fos/googlecrawling.htm

services would usually require the base URL of the repository. An example of a base URL: http://scholar.sun.ac.za/oai/request

Use the following to validate your base URL:

- Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) Validator & Data[29]
- Open Archives Initiative – Repository Explorer[30]

Start registering your repository with the following:

Table 4: Directories and harvesters to register a repository with

Software Specific Directories e.g. DuraSpace (DSpace)	http://registry.duraspace.org/register-repository
OAIster	http://www.oclc.org/oaister/contribute.en.html
ROAR	http://roar.eprints.org/cgi/register
OpenDOAR	http://www.opendoar.org/suggest.php
Open Archives Initiative	http://www.openarchives.org/Register/ValidateSite
Google Scholar	https://support.google.com/scholar/troubleshooter/2898950?rd=1
re3data.org	http://www.re3data.org/suggest/

Once the Open Access Policy has been approved, it can be registered with ROARMAP.

Step 8: Marketing

As with every new service, potential users need to be informed about the possible benefits of the repository. In the first instance it is important that researchers buy into this service and start submitting their research output because of the many benefits offered through Open Access. Secondly, researchers from all over the world should be made aware of the new service in order to increase usage of items in the repository. This marketing should be done on the following levels:

- Institutional marketing: amongst local user community;
- National marketing: make funders, publishers etc. aware of the new service; and
- International marketing: increase the visibility so that others know about the service and that research can be accessed free of charge.

The **LEADIRS Workbook** by Barton and Waters (2004) contains a comprehensive section on marketing a repository (incl. Open Access). It is advised that a Marketing Plan with timeline be compiled to coordinate all marketing activities. The following are suggestions on what approach to follow:

[29] http://validator.oaipmh.com/
[30] http://re.cs.uct.ac.za/

- Identify possible audiences (institutional, national, international)
- Identify key stakeholders on campus to work with (Research Office, IP Office, Registrars' Office, Marketing & Communication Office etc.)
- Decide which approach will be followed: top-down or bottom-up
- Develop marketing material: web page (also add service to institutional web page), help wiki, pamphlets, video clip uploaded to YouTube, posters etc.
- Identify events during which the repository can be promoted: road-shows, open research days, orientation sessions, Open Access Week, conferences, workshops etc.
- Social media: make use of twitter, facebook, blogs, mailing lists, etc. to announce or put the spotlight on new services, new software features, high profile researchers, high profile research conducted etc.
- Newsletter: issue a newsletter to keep all researchers informed on Open Access developments, publisher policies, usage of repository content etc.
- Identify early adopters (champions) and run a pilot with this group. Once the repository has proven to be successful with this initial group, it will be easier to sell the idea to other researchers and stakeholders.

Marketing is an ongoing process since new developments need to be communicated, and new researchers will have to be updated on services such as the repository. Also see the Marketing Communications Plan as part of the Business Plan earlier in this chapter. There are numerous web pages on the web containing marketing material, which can be adopted for own purposes:

Open Access Week http://www.openaccessweek.org/

SPARC http://www.sparc.arl.org/about

OASIS http://www.openoasis.org/

Step 9: Training and user support

As with marketing, training is an ongoing process. The system software might change, which will require additional training, and new researchers might join the institution, which will also require training. As you plan your service, consider the amount of training and support you will want to offer (Barton & Waters, 2004). Each of the varied user groups needs general exposure to the service –its features and how it is it used. In addition, library staff who create metadata and add content need training specific to their jobs. Academics and their designated content contributors need training in adding content to the system and setting up content areas for departments or research centres. Training might include:

Library staff

- General procedures, understanding the service goals, etc.
- User interface, adding content

- Metadata procedures
- Search methods

Researchers/Academics and Academic/Administrative Staff

- General procedures, understanding the service goals, etc.
- User interface, adding content
- Metadata creation
- Creating a post-print pdf

Also take into account the different types of learners and their preferred learning styles when creating learner materials, and make provision for more than one learning style:

- Visual: prefer pictures/images e.g. animated tutorial/visual presentation/video
- Aural: prefer sound/music e.g. podcast
- Verbal: prefer reading e.g. quick guide with steps (self-help)
- Physical: prefer hands-on e.g. self help
- Logical: prefer hands-on e.g. in an e-classroom
- Social: prefer group learning e.g. group orientation sessions
- Solitary: prefer individual learning e.g. self help

Depending on the type of learner, the following can be used to conduct the training:

- Podcasts
- Webinars e.g. BigBlueButton[31]
- Animated tutorials e.g. Camtasia Studio[32]
- Pamphlets
- Manuals

Training can be promoted in collaboration with other key stakeholders on campus, through the institutional web, the library web, as well as through social media tools. The training program should be made available well in advance, and also included as part of the overall institutional training planning program (calendar).

The repository management team itself should also stay current on new developments through enrolling to mailing lists, newsletters, conferences, presenting and authoring papers to share experiences, and many more.

[31] http://bigbluebutton.org/
[32] http://www.techsmith.com/camtasia.html

Step 10: Populating the repository

Populating the repository with content can be challenging, especially if no Open Access policy is in place, and if it is a new service. The following tips are guidelines on how to increase the size of a repository:

1) Since it is labour intensive and costly to maintain more than one repository, consider centralising all repositories within an institution.
2) Although the ideal is to only upload full text content to a repository, consider making at least bibliographic records available via the repository. Add a note such as the following to each record: *Please help us populate the repository by e-mailing the post-print version of the article to …..* Bibliographic records can be batch imported from the library catalogue (records of printed theses/dissertations), the annual research report for an institution, or e.g. Scopus alerts. Through making bibliographic records more visible, you will be able to get an indication on which material should be prioritised.
3) Digitise retrospective theses and dissertations and upload to the repository. This will depend on whom the intellectual property (especially copyright) belongs to.
4) Set up alerts e.g. with Scopus. This way you will be notified once a new article is published by a researcher within the home institution, and can then follow up immediately while the post-print is still available.
5) The repository should be an organisational commitment, and the responsibility of all. Involve faculty librarians, cataloguers, inter-library loan staff, and key stakeholders such as the research office, intellectual property office, marketing etc.
6) When a thesis/dissertation is requested via an inter-library loan, digitise it immediately and send the link to the requesting institution.
7) Keep researchers informed, and advise them to not sign away their copyright. Also provide them with a disclaimer which can be attached as part of an agreement with a publisher. See the licenses to their work.
8) Work with the alumni office and try and get hold of retrospective theses/dissertations and research articles.
9) Properly brand the full text and make it Google friendly, e.g. by adding the url of the repository and the institutional repository name to the header as a watermark. This way – when the full text is printed or saved – the reader will be reminded where the primary document was hosted and will cite it accordingly.
10) Create social networking accounts and use widely to communicate new submissions etc.
11) Once an Open Access policy has been approved, implement a workflow between the research office, repository and registrars' office. Follow a holistic approach and identify how the systems can communicate with one another, without adding to the existing workload. E.g. if academics are

required to report on research conducted, the research can be submitted to the repository and a report can be exported to the research office system. If students are required to submit their theses/dissertations electronically, establish a workflow between the administrative system (registrars' office) and the repository.

12) Encourage researchers to create links to items available in the repository from their personal profile pages on the WWW (incl. LinkedIn, facebook, faculty/departmental pages, wiki's etc.), Curriculum Vitaes, and from research reports. This will result in generating even more traffic to items in the repository, giving it more exposure.

1.6 LET US SUM UP

In this unit, we discussed various types of repositories, and how these are managed and installed. We used a general approach to discuss about repositories, without being specific to any particular software. We also looked at different types of software and compared their features to enable you develop business plan for installing OA repositories. In the next unit, we will discuss Open Access Journals.

1.7 CHECK YOUR PROGRESS

(For answers, see end of the module)

1. Of the three main categories of Digital Repositories two are: institutional repositories, subject repositories which is the third one?: _____

2. Which of the following is not designed for institutional repositories:
   a) DSpace
   b) Koha
   c) Fedora
   d) GSDL

3. Judge true or false:
   a) IntraLibrary is commercial digital library software T/F
   b) DSpace cannot import/export from metadata formats other than the Dublin core T/F
   c) MS Windows is a compatible operating system for an IR T/F

4. Which are the default subject classes in EPrints:
   a) DDC
   b) UDC
   c) LoC
   d) None of these

5. Which of the following is not true in case of DSpace
   a) there is good separation between data and metadata
   b) subject classes are UDC based
   c) Is OAI- PMH complaint
   d) Operating system used is Ubuntu

6. In institutional repositories which may not be a free service
   a) Training content submitted
   b) User reporting
   c) Providing extra-storage space
   d) Copyright & IP consultation

7. Which of the following is not a primary research output to be accepted in IR
   a) Books
   b) Conference papers
   c) Web articles
   d) Post prints of research articles

8. Which of the following is accepted for inclusion in the IR
   a) Administrative material
   b) Work in progress
   c) Images
   d) Copyright material

9. Marketing of IRs can be done
   a) by printed brochures
   b) All staff meeting
   c) Both of the above
   d) None of the above

10. Which may not be the job of a faculty librarian (collection Administrator) in case of IRs
   a) Verify quality of submitted material
   b) be a digitization expert
   c) promoting IRs among users
   d) Identify new collections

11. Put the following steps in the right order in designing an IR
   a) Training submitters and users
   b) Marketing
   c) OA Policy formulating
   d) Populating the repository

UNIT 2 OPEN JOURNALS

Structure

2.0 INTRODUCTION

According to Stranack[33] (2008), scholarship is about the creation and sharing of knowledge, and one of the most important means of exchanging the results of research activities is the academic journal. As with institutional repositories, the Internet and the development of online journal software made the publishing of Open Access journals possible, thereby automating many of the processes often associated with journal publishing. This is known as the golden route to Open Access, and the direct counterpart of subscription journals. These journals are managed online (with reference to the submission, peer review, and editing processes) as well as published online. In some instances paper copies are printed on demand (at a cost for the reader).

Through Open Access journals, research findings can be disseminated amongst the largest possible audience. At the same time researchers, as readers, need the broadest possible access to research findings. To do new research and to build on existing research, these findings need to be published in the open domain. Nowadays – if research results are not in the open – it does not exist for most of the global population, since only a selected few can afford access to expensive subscription journals.

This approach does not only apply to new journals, but existing subscription journals can also transform to Open Access. In this unit, we will discuss about different types of Open Access journals and their contribution to improving access to peer reviewed information. We will also focus on how librarians can start OA journals to assist their patrons.

[33] http://pkp.sfu.ca/files/AfricaNewJournal.pdf

2.1 LEARNING OUTCOMES

At the end of this unit, you are expected to be able to:

- Explain the concept of open access journals;
- Identify the types of OA journals;
- List different types of software available for hosting open journal system;
- List the criteria for choosing open journal system;
- Carryout needs analysis for OA journal and prepare a business plan for deployment of appropriate software; and
- Take appropriate steps to install and manage OA Journal system.

2.2 WHAT IS OPEN ACCESS JOURNAL?

The Directory of Open Access Journals (DOAJ[34]) defines Open Access journals as journals that use a funding model that does not charge readers or their institutions for access. To be included as part of the directory, it needs to adhere to the BOAI (Budapest OA Initiative) definition of Open Access: users should have the right to "read, download, copy, distribute, print, search, or link to the full texts of these articles". The BOAI further says: "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 ... copyright law gives the copyright holder the right to make access open or restricted, and the BOAI seeks to put copyright in the hands of authors or institutions that will consent to make access open. Open Access journals will either let authors retain copyright or ask authors to transfer copyright to the publisher. In either case, the copyright holder will consent to Open Access for the published work. When the publisher holds the copyright, it will consent to Open Access directly. When authors hold the copyright, they will insure Open Access by signing a license to the publisher authorizing Open Access."

To further qualify for inclusion in the DOAJ, an Open Access journal should adhere to the following criteria:

- The journal must exercise peer-review or editorial quality control.
- The journal must report primary results of research or overviews of research results to a scholarly community.
- Subject coverage: all scientific and scholarly subjects are covered.
- Types of resource: scientific and scholarly periodicals that publish research or review papers in full text are accepted.
- Acceptable sources: academic, government, commercial, non-profit private sources are all acceptable.

[34]http://www.doaj.org/

- Level: the target group for included journals should primarily be researchers.
- Content: a substantive part of the journal should consist of research papers. All content should be available in full text.
- Journals in all languages are included.
- All content must be made freely available.
- Free user registration online is allowed.
- Open Access without delay will apply (e.g. no embargo period).
- Online journals should have an eISSN.

2.3 TYPES OF OPEN ACCESS JOURNALS

Stranack (2008) identified a variety of journals produced in the world of scholarly and scientific publishing. Some journals are broadly focused and cover a range of topics from a diversity of contributors. Others are more narrowly focused, on either the research interests of the contributors, all coming, perhaps, from the same academic discipline or from the same institution, or on the subject matter. It is important to select the best type of journal to meet both your immediate and long-term needs (Stranack, 2008). When offering an Open Access journal service, this service can be inclusive of different types of journals.

General journals: multidisciplinary, broadly focused, and accepting contributions from many fields of research.

- Specialized journals: more narrowly-defined focus, and is often discipline-specific.
- Regional journals: covering research from a particular geographic area, whether national or international.
- Institutional journals: centred on an individual institution.
- Annual Reviews: published once a year.

Deciding on the best choice for a new journal must be based upon research interests, the size of the potential audience for the new journal, the absence of an existing journal covering anarea of interest, and any institutional requirements that may need consideration. It is also important to remain flexible, as it is possible to combine different journal types, depending on the situation (Stranack, 2008).

2.4 OPEN SOURCE JOURNAL SOFTWARE

As with institutional repository software, there are various open source platforms available to publish Open Access journal titles. If an institution – e.g. the library – should decide to investigate the possibility of hosting online journals, it would be a good idea to start with an audit of possible journal titles

affiliated with that institution. At the same time, needs analysis can be conducted to determine whether there is a need for such a service, and what the service should offer. Often the rationale for keeping a journal title as close as possible to "home", is because journal editors and journal managers feel more comfortable to work with an established organisation within easy reach, instead of with a third party that might be dependent on funding and therefore a less sustainable option. More and more universities are now setting up their own journal hosting and publishing services, and because of the expertise within the library, it is often driven by the library. If a service beyond hosting is needed, e.g. a service should also include publishing support (reviewing, editing etc.) the library might need to acquire additional expertise and for example work with the university press.

Once the need for an Open Access journal service has been established, open source software systems can be evaluated to identify a system that best addresses the needs of the journal community. According to the Online guide to Open Access journal publishing[35] the system should allow the management and tracking of the submission of manuscripts, the peer review process, and once peer review is finalized, the finalizing of the material through copyediting, layout editing/typesetting and finally actual publication. It is also useful to maintain a database of reviewers, submitting authors, and other key information.

Although a manually updated overview of all transactions may suffice for a low-volume journal, a web-based system is a must for larger journals and even for smaller publications will be time-saving and facilitate the easy generation of reports and statistics. The possibility for authors to submit their manuscripts through an online system also adds an element of professionalism to the overall look and feel of a journal.

2.4.1 Open Source Journal Systems

Journal publishing software automates many of the processes involved when publishing a journal. Authors are expected to submit a new article online, from where the editor will receive a system generated notification. The editor then assigns reviewers, who will also receive notifications and will submit their reviews online again. From the editor-in-chief, the reviewed article is sent to the copy editor and layout editor. Once the process of preparing an issue has been completed and the journal is ready for publication, the journal issue can be published with the click of a button. Added benefits are:

- Should an article need to be replaced for some reason (not recommended though), it is quite easy to replace the file.
- A new article can be published once ready, and the editor does not need to wait until all articles for a specific issue are complete (accelerating the publication process).
- All actions and communication are tracked, audited and recorded accurately.

[35]http://www.doaj.org/bpguide/

- The reviewing process can be a continuing process, since any potential reader can post comments related to an article and engage into a dialogue with the author/s.
- The full text is also indexed, which makes it much more visible than what would have been the case if it was only accessible via a bibliographic entry in the library catalogue.
- Managerial information (usage statistics) can be monitored, demonstrating the impact of the journal.

The Open Access Directory (OAD[36]) currently lists the following software systems as open journal systems:

- Ambra[37] - Formerly part of Topaz (below), but forked.
- CLEO[38] - In French.
- DiVA[39] - From the Electronic Publishing Centre at Uppsala University Library.
- DPubS[40] - From Cornell University Library and Pennsylvania State University Libraries and Press.
- E-Journal[41] - From Drupal.
- ePublishing Toolkit[42] - From the Max Planck Gesellschaft.
- GAPworks[43] - From German Academic Publishers (GAP).
- HyperJournal[44] - From the University of Pisa.
- Lodel[45] - Lodel is the publishing software behind Revues.org.
- OpenACS[46]
- Open Journal Systems[47] - From the Public Knowledge Project.
- SOPS[48] - From SciX.
- Topaz[49] - From the Public Library of Science. Also see Ambra, above.

According to a survey conducted by Mullins et al. (2012[50]), the most prevalent journal publishing platforms reported were Open Journal Systems (57%), DSpace (36%), and BePress's Digital Commons (25%).

[36]http://oad.simmons.edu/oadwiki/Free_and_open-source_journal_management_software
[37]http://www.ambraproject.org/
[38]http://cleo.cnrs.fr/
[39]http://www.diva-portal.org/about.xsql
[40]http://dpubs.org/
[41]http://drupal.org/project/ejournal
[42]https://dev.livingreviews.org/projects/epubtk/
[43]http://developer.berlios.de/projects/gapworks/
[44]http://www.hjournal.org/download
[45]http://www.lodel.org/
[46]http://openacs.org/
[47]http://pkp.sfu.ca/ojs/
[48]http://www.scix.net/sops.htm
[49]http://www.topazproject.org/trac/wiki

Table 5: Most prevalent journal publishing platforms

	Open Journal Systems (OJS)	DSpace	Digital Commons (BePress)
URL	http://pkp.sfu.ca/ojs/	http://www.dspace.org/	http://digitalcommons.bepress.com/
Demo Installation	http://pkp.sfu.ca/ojs/ojs_demo	http://demo.dspace.org/	http://demo.dc.bepress.com/
Download	http://pkp.sfu.ca/ojs/ojs_download/	http://www.dspace.org/latest-release	Not applicable – hosted solution
Example Journal Titles	https://pkpservices.sfu.ca/customers	http://registry.duraspace.org/registry/dspace	http://digitalcommons.bepress.com/online-journals/

Alternatively, Open Access journal launch services are available to help launching new Open Access journals (Open Access Directory (OAD):

- BioMed Central[51]
- Duke University Libraries[52]
- International Consortium for the Advancement of Academic Publication (ICAAP)[53]
- The Journal of Medical Internet Research (JMIR)[54]
- Medknow Publishing[55]
- Michigan Publishing[56]
- Open Access Press[57]
- Open Humanities Alliance[58]
- PhysMath Central[59]
- PKP Journal Hosting[60]
- Resilience Alliance[61]
- Scholarly Exchange[62]
- Scholastica[63]

[50]http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1023&context=purduepress_ebooks
[51]http://www.biomedcentral.com/info/publishingservices/transferorstart
[52]http://library.duke.edu/openaccess/ojs.html
[53]http://www.icaap.org/services.php
[54]http://www.jmir.org/cms/view/Start_a_new_journal
[55]http://www.medknow.com/newjournal.asp
[56]http://www.publishing.umich.edu/journals/
[57]http://openaccesspress.com/what-we-do
[58]http://openhumanitiesalliance.org/index.html
[59]http://www.physmathcentral.com/about/independent/start/
[60]https://pkpservices.sfu.ca/content/journal-hosting
[61]http://www.ecologyandsociety.org/news/announcements/rapublishing.php
[62]http://www.scholarlyexchange.org/free.html
[63]https://www.scholasticahq.com/tour/editors/publish-issues

2.4.2 Criteria for the evaluation of Open Journal Software

Cyzyk and Choudhury[64] (2008) evaluated open source journal software according to the following criteria:

1) Institutional affiliation and other indicators of the viability of the open-source project
   - Name of system
   - Current version of system
   - Tested version of system
   - URL of project homepage
   - Institutional affiliation
   - Age of project
   - Notes on long-term viability of project
   - Degree of deployment
   - Type of open-source license
   - Licensing notes
   - Other documentation (Webliography)

2) Technical requirements, maintenance, scalability, and documented APIs
   - Local install or ASP?
   - Operating system requirements
   - Hardware requirements
   - Application server requirements
   - Primary programming language
   - Auxiliary programming language
   - Application framework
   - Database server requirements
   - Other software requirements
   - Required skills
   - Internal backup and restore functions
   - Scalability: Application
   - Scalability: Data
   - API: Batch ingest
   - API: Batch ingest formats
   - API: Batch export
   - API: Batch export formats
   - API: Support for JSR 170
   - API: Support for OAI harvesting
   - API: Support for eduSource Communication Layer (ECL)
   - API: Support for other Web services

[64] http://jhir.library.jhu.edu/handle/1774.2/32737

- Security note

3) Submission, peer review management, and administrative functions

- Support for multiple, discrete publications
- Multiple administrative roles
- Administrative roles configurable
- Submission into system initiated by authors
- Editorial workflow configurable per publication
- Automated email alerts to authors
- Automated email alerts to editors
- Automated email alerts to reviewers
- Stylesheets, customizable look and feel per publication
- Versioning
- Archiving

4) Access, formats, and electronic commerce functions

- Accessibility of system
- Accessibility of document output
- Internationalization support
- Output in multiple document formats
- Document formats supported
- Plug-in requirements
- Usability notes
- Citation linking
- OpenURL resolver
- RSS feed
- Digital rights management
- Full-text search and retrieval
- Federated searching
- Authentication mechanisms
- Subscription services
- Electronic commerce functions
- Context-sensitive Help support

The results of the evaluation are available from a survey by Cyzyk and Sayeed[65] (2008), commissioned by the Open Society Institute (OSI).

[65]http://jhir.library.jhu.edu/handle/1774.2/32737

2.4.3 Open Access Journal Business Models

With an Open Access journal, the aim is to provide Open Access to all content for all readers, free of charge. Since certain costs are still involved when publishing in an Open Access format, the journal have to identify other revenue resources to remain financially sustainable.

The Open Access Directory (OAD) describes the following business models that can be adopted by journal titles in order to remain financially sustainable, and also provides some examples. Some revenue sources are supplementary and not sufficient, and are used supplementary to larger business models.

- Advertising: sell advertising space to companies, use a service such as Google AdSense (places ads on pages based on an algorithmic reading of the content).
- Auction: publishers bid on articles at auction to publish.
- Crowd-funding: potential projects are pitched online; the broader community—the "crowd" —may then choose to fund the submitted work with financial donations, which cover production costs. With enough financial backing from the crowd, the project goes into production.
- E-commerce: the journal offers branded products for sale, either internally or through a vendor.
- Endowments: the journal builds an endowment and use the annual interest to cover its expenses.
- Fund-raising: Solicit donations.
- Hybrid Open Access journals: In addition to the standard page fee, an additional fee is charged for an article to be published in the open. The costs can be covered by the author self, or by a sponsor or the institution the author is affiliated with. In some instances this lead to institutions putting in place Open Access Funds.
- Institutional subsidies: An institution subsidises an OA journal.
- Membership dues: The membership organization (learned society) use membership dues to support an OA journal, in whole or part.
- Priced editions: The journal provide OA to one edition and sell access to another edition. The OA edition should contain the full text and other information (charts, illustrations, links, etc.), but the priced edition may appear earlier in time or include extra features, such as print.
- Publication fees (Article Processing Charge/APC): Journal charges a fee upon acceptance of article for publication, to cover costs involved.
- Submission fees: Charge a fee for evaluating a submitted paper, whether or not the paper is later accepted.
- Temporary OA: The publisher offers free online access to a work for a restricted period, after which the work becomes toll access.

- Value-added services: The journal offers extra services on top of OA content. A range of services is possible, for example, article alert services and site customization.
- Volunteer effort: Use unpaid volunteers for some of the work in producing the journal.

2.5 DEPLOYMENT AND IMPLEMENTATION

Academic libraries have always had an important role in terms of providing access to information. According to Mullins et al. (2012) "libraries have a deeply ingrained mission to promote the creation and diffusion of knowledge and to preserve it for the long term. The mission of academic libraries has not changed, but the means of fulfilling it has."

Through the implementation of an Open Access journal service, the academic library can fulfil this role in an innovative and alternative way. Traditionally journals have been hosted and published by scholarly publishers, but the shift to Open Access, the affordability and availability of open source journal management software, and the expertise of skilled library staff have made it possible for libraries to now also provide this service.

As with any new service, it is important to document planning through a business plan. The literature (Crow & Goldstein[66], 2003; Online guide to Open Access journal publishing[67]) focuses on having business plans for individual journal titles. Although this is important, it is also important to plan for a comprehensive service, should a university/library embark on hosting a series of academic journals.

A few examples of libraries offering an Open Access journal hosting service:

- Purdue e-Pubs Journal Publishing Services[68]
- University of St Andrews Journal Hosting Service[69]
- Stellenbosch University Library and Information Service[70] (SUNJournals)

The above also offers web pages describing its service offering for potential clients.

2.5.1 Business Plan: Open Access Journal Service

Following is a framework of typical components that should be addressed as part of the business plan for the implementation of an Open Access journal service. Please refer to the resources at the end of this tutorial for comprehensive business plans. Also remember that no business plan will look

[66]http://www.sparc.arl.org/sites/default/files/presentation_files/business_planning.pdf
[67]http://www.doaj.org/bpguide/
[68]http://www.lib.purdue.edu/publishing
[69]http://www.st-andrews.ac.uk/library/services/researchsupport/journalhosting/
[70]http://library.sun.ac.za/English/services/oa/Pages/sunjournals.aspx

the same, and there is not such a thing as the best business plan. All depends on the institution, and the needs of its user community.

The components are:

Cover Page

Document History Page

Contents Page

Executive Summary
It is recommended that a brief summary (max. 2 pages) be provided of the contents of the business plan. Compile once the business plan has been completed.

Business Plan

1) **About X**
   Provide an introduction to the institution/university/library, and its strategic objectives.

2) **An Open Access Journal Hosting Service for X**

   2.1 About Open Access Journals

   Describe what an Open Access journal is, and indicate that it is a trend that more and more academic libraries are hosting and/or publishing academic journals. Also discuss the benefits and rationale behind Open Access journals.

   2.2 About the Software (e.g. OJS)
   Once the software has been evaluated and a suitable solution has been identified, provide a description of it, as well as special features. If open source software will be used, motivate why it would be a better choice. Also indicate whether technical support will be readily available.

   2.3 About the Open Access Journal Service
   Describe and address the unique purpose, aims and scope of the service. Also indicate the benefits it will offer to the institution, research and broader community. Make a strong case that the new service will be aligned with the strategic objectives of the university/institution.

   Service Definition

   Service Model

   Differentiate between core (free) and premium (fee-based) services that will be offered as part of the Open Access journal service.

   Service Definition

   Describe the mission of the service and kind of content that will be accepted. Also include criteria a high quality Open Access journal should adhere to.

Market Analysis

From the needs analysis, provide information on the user group (e.g. editors of journals affiliated with the institution, research community) that will benefit from this service. Also refer to existing services in the market, and benchmark against those services e.g. why a third party is not used to host institutional journals. Mention specific titles (incl. journal editors) that will form part of a pilot project, who will read and contribute to those, and how the market will be penetrated. Key stakeholders can also be mentioned, for example the intellectual property rights office, research office etc.

Strategic Context

What is the strategic context of this service, and how is it aligned with local, national and international trends? Provide for example a description of the research and Open Access strategy of the library and institution. Also refer to previous achievements as a result of the strategy, and the governance to implement it. Indicate which units are responsible for implementing the strategy.

Marketing

Indicate potential audiences the service will be marketed to, the marketing approach that will be followed, and include a marketing and communications plan.

Management and staffing

Governance, Roles and Responsibilities, Job descriptions.

Proposed budget

Income and expenses when hosting an Open Access journal service. Indicate the cost to company, as well as hosting fees that will be charged by the journal service, if any.

Implementation Timeline

Recommendations

Address issues that need to be in place for the service to be a success, e.g. resources.

Bibliography

2.5.2 Business Plan: Individual Open Access Journal Title

In addition to a business plan for the new service to be offered, it is recommended that each journal also compile a written plan that describes what the journal is about, the background for launching the journal, how it will be financed, all parties who will be involved and the roles they will perform, in addition to target audiences and how they will be reached.

According to the Online guide to Open Access journal publishing, creating a business plan will likely involve the participation of the entire journal team

(editorial staff, marketing, financial and production staff). The main output of the activity described in this section is the business plan itself. However, a business plan is a conglomerate of information about proposals for launching and operating a journal, and other outputs will also be generated through this activity, including: a three year budget, a description of the aims and scope of the journal, a market analysis, and a simplified operations plan. These outputs will provide important input or controls for nearly all other activities the editor will carry out when launching or publishing the journal.

It is worth remembering that in addition to offering a blueprint for the editorial and publishing team, a well-written business plan can also be used when seeking funding and speaking to potential partners. As such, it should be written with these potential audiences in mind – it may save a lot of time and effort later.

The *Online guide to Open Access journal publishing* has selected the following most critical activities involved in creating a business plan:

Business plan contents

Business plans generally include seven main elements, each of which can be presented as a chapter. These are:

- Concept – what is the unique purpose of launching the journal? What are the aims and scope and what does it offer the research community and possibly others?
- Market analysis (readership and authors) – Who will read and/or contribute to the journal? How will the market be penetrated (capture a large and loyal base of authors and readers)?
- Management presentation (editors) – Who will run the journal and what are their qualifications? What specific skills and resources does this person have?
- Operational plan – What day-to-day procedures must be followed and carried out? How will daily tasks be accomplished?
- Financial plan – What financial costs will the journal incur? How will these costs be met? Usually includes a 3-5 year budget which will reflect the financial model(s) you base the journal on.
- Business strategy – will day-to-day business be conducted in order to meet financial and other goals within the limitations of the resources available?
- Risk assessments – What potential risks exist that could impede on the success of the journal? How will these be counteracted?

To generate the information needed to write the business plan and answer the questions above, the *Online guide to Open Access journal publishing* recommend carrying out six (6) activities that will provide input for the plan: 1) Describe the planned journal, 2) Conduct a market analysis, 3) Consider financial models, 4) Define the business strategy, 5) Create a 3-year budget, and 6) Conduct a SWOT analysis. The following have been taken form the Online guide to Open Access journal publishing.

Describe the planned journal

It is useful to begin a business plan by briefly describing the planned journal. The following information could be included in the description:

- Proposed title/working title
- Field to be covered/niche
- General scope and aims
- Electronic only or electronic and paper edition
- Number of issues and/or papers published per year
- Planned language(s) journal will be published in

Conduct a market analysis

Conducting a market analysis involves more deeply investigating the opportunity within the field the journal will take advantage of. In essence, a market analysis allows one to better understand why it is a good idea to launch the journal.

The market analysis should consider at least three main areas: What does the publishing landscape surrounding the journal look like? What opportunities exist for a new journal? How will the 'market' be penetrated and potential readers and contributors be reached? Some questions that can help guide one:

The publishing landscape

- What other journals exist in the same field?
- What are their strengths?
- What are their weaknesses?
- Are they successful?
- Are there any Open Access journals already established in the field?

Opportunities

- What niche has not yet been covered by the established literature?
- Do the established journals fulfil all the needs of readers and contributors in
  the field?
- Is the research field that the journal addresses growing? By how much annually?
- Journals are often categorized according to three tiers; is there a tier that is not covered? (E.g. one major top tier journal exists and many lower quality journals, but no second tier journals.)
- What would make the journal stand out from its competitors?

- What advantages can the journal offer to readers and contributors? (It could be Open Access\)

Market penetration

- Which readers might be interested in the journal?
- Who will contribute to the journal and how large is this group?
- How can one best reach target readers and contributors?

By answering the above questions one can establish if there is a need for the proposed journal. The answers may also help to tweak the proposal to meet actual market needs and create a more successful journal.

In addition to the above, a SWOT analysis may also help one to analyze the market.

Define the business strategy

A business strategy refers to how one plans to conduct the day-to-day business of producing the journal in a way that allows one to meet financial and other goals within the limitations of the resources available.

It is useful to define the business strategy as a means of understanding and explaining to others how the business model (financial model) and operations plan fit together. It is also useful to include both a short-term and long-term perspective within the business strategy as it is often the case that different strategies are necessary over the life-course of the journal. The business strategy will have an impact upon the financial model(s) one chooses and vice versa.

Consider financial models

It seems that, at present, scholar publishers are largely basing their funding model on the provision of volunteer services and in-kind support. However, some are charging a Publication fee (sometimes called Article Processing Fee) and/or receiving support from a funder (e.g. a national research council or a university/institution). To those possible sources can be added a whole host of others that include, but are not limited to:

- Added value products (reprints and permissions)
- Advertising
- Fund-raising (endowments)
- Institutional subsidies
- Membership dues and other society funding
- Publication and/or submission fees
- Grants
- Sponsorship

- Subscription income (if print edition)
- Etc.

As one considers financing options, brainstorm with the team about the possibilities. There may well be opportunities in the field or region that are not listed above. Indeed, financing Open Access journals seems to require both ingenuity and creativity.

Should one chooses to introduce publication and/or submission fees, do bear in mind that these often need to be set quite low initially until a base of loyal authors is built up and the journal has achieved a reputation that people are willing to pay for.

Your choice of financial model will inform your business strategy and vice versa.

Key considerations

- Are the researchers of the community to which the journal turns accustomed to publication fees, either from other Open Access journals in the field or from having had to pay page charges previously?
- Does the relevant research council or university provide financial support for the publication of (Open Access) journals?
- Does the university/institutional library offer hosting for Open Access journals?
- May it be worth allowing for e-advertising on the journal's website? What forms of e-advertising are considered appropriate?
- Will the sale of subscriptions to printed copies be affected by the fact that the journal is freely available online?

Create a budget

Creating a three-year budget, showing projected costs and revenues each year, will allow one to gain a rough picture of the financial health of the journal over the short-run. Costs and revenues over the three years may look quite different and thus it is useful to account for this. For example, when starting an Open Access journal the biggest cost lies in the development of a digital publishing capability. The implementation costs, of course, depend on how many features are needed and how much functionality is required. These are largely one-time costs that will probably impact only on the Year 1 budget. However, one will need to cover them at a time when there are few financial resources – if the financial model is based on submission and/or publication fees, for example.

Before creating the budget, it is useful to ask a number of questions, among them:

- What are the financial goals (break-even, generate a small profit, etc.) for the journal?
- Will all activities be carried pout in-house or will some be outsourced to partners?

- What does the short-term vs. long-term financial picture look like?
- What is the growth plan for the journal (how many submissions and published articles are expected per year)?

The answers to these questions will help steer the budget for the journal, including both the types of costs likely to incur (e.g. outsourcing) and what types of revenues will be necessary (e.g. to cover costs or generate a profit).

As the budget is created, bear in mind that costs and revenues are structured in different ways and this needs to be reflected in the budget. In his work on "The cost profiles of alternative approaches to journals publishing", Roger Clarke[71] (2007) identifies the following types of costs, each of which differs in how it is structured:

- Establishment costs
- Submission-related costs
- Article-related costs
- Issue-related costs
- Generic costs
- Infrastructure maintenance costs
- Financial costs

Differentiate in the budget between revenues that are structured differently, e.g. those that are collected annually (e.g. a grant) versus those that are collected per submission, per publication, per page, etc.

Responsibility for creating a budget will likely fall upon the editor-in-chief, who will be applying for funding. However, the editor-in-chief will probably devise this in close cooperation with a Financial Officer and with input from other members of the team (e.g. Marketer may provide suggested costs for marketing materials). Staff at the institution's financial department might also be able to provide some assistance with budgeting.

Conduct a SWOT analysis

A fruitful exercise to carry out prior to creating a business plan is a SWOT Analysis. SWOT is an acronym for Strengths, Weaknesses, Opportunities and Threats. Quite simply, the exercise allows you to identify strengths, weaknesses, opportunities and threats in relation to the launch and operation of the journal and to plan for their eventuality.

Work with the entire team to brainstorm and later hone a list of what is regarded as the main strengths of the journal and the opportunities that exist for introducing the journal. What is critical for the business plan is to not only list these strengths and opportunities but to also include a short plan for how one can maximize strengths and take advantage of opportunities.

[71] http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2048/1906

It goes without saying that most things do not go as planned. Though difficult, it is important to imagine risk scenarios by identifying the weaknesses of the journal and possible latent threats (either internal or external).

Some examples of weaknesses:

- Limited budget
- Inexperience in editing journals
- Journal is unknown in the field
- Misunderstandings exist about Open Access in field
- Journal has no Impact Factor
- Journal is not in XY index, while competing journals are

Some examples of possible threats:

- Possible changes in legislation
- Research council might not agree to extend funding beyond Year 2
- Misunderstandings about Open Access can impact submission levels negatively
- Economic downturn threatens ability of institutions to cover publication fees

What is critical for the business plan is to create contingency plans for handling threats that become reality and a plan for how you will minimize the effects of the weaknesses of your journal.

The information and plans generated through the SWOT analysis will provide important input to the market, business strategy and may lead to reconsideration or tweaking of the financial model.

2.6 SOFTWARE INSTALLATION, MANAGEMENT AND SERVICES

Once the business plan has been approved and a decision has been made on which open journal software system will be used, the software can be installed. It is recommended that the software first be installed on a test server, then tested, next on a developmental server, then tested, and then finally on the production server, where it should also be subjected to a final test. The deployment, implementation, management and use of an open journal system are software specific, and it is not part of the scope of this tutorial to cover the installation procedures. The installation will have to be done by a technical person (hardware (systems administrator) and software technologist (programmer)) with the necessary expertise as indicated in the business plan.

Should an institution/ library decide to offer a journal hosting service, it is recommended that this service be described on the institutional/library web

page. New journal applications can be submitted through an online application form, and journals can enter into an agreement (Memorandum of Understanding). For examples, visit the following:

- Purdue University Libraries[72]: This university library offers a comprehensive publishing service including authoring (publishing tools, copyright advice), production (copyediting, design, printing), dissemination (distribution, marketing, discoverability) and preservation (citability, archiving, metrics).
- University of St Andrews Journal Hosting Service[73]: The library hosts, distributes and provides a secure archive for journal content. The journal manager and editorial staff are the publishers of the journal and will be responsible for management and administration, and for journal content.

A library will have to decide whether it will set up a full publishing and hosting service, or a hosting service only. In the case of a full publishing and hosting service, it might be necessary to work with stakeholders on campus such as the university press, copyright office etc.

The *Online guide to Open Access journal publishing* provides helpful guidelines on setting up an individual journal title, which can also be applied towards setting up a journal hosting service.

2.6.1 Setting up a journal hosting service

Important basic steps when setting up an open journal hosting service (it will depend on the service offering), were taken from the *Online guide to Open Access journal publishing*:

Step 1: Identify server space to host the journal service

Journal publishing software and files will need to be housed on a server or hosted by a web host. Server space should be planned for. Although pdf files do not take up much space, it might be that in future more space will be required for data sets, images, audio and video files linked to articles published in a specific journal.

The Online guide to Open Access journal publishing lists a number of factors that should be taken into consideration when choosing a web host:

[72] http://www.lib.purdue.edu/publishing
[73] http://www.st-andrews.ac.uk/library/services/researchsupport/journalhosting/

Table 6: Factors to take into consideration when choosing a web host

What?	To think about
URL	Some web hosts are also a registrar of domain names, but even if you choose to purchase a journal specific URL through a separate domain registrar your web host will be able to handle the domain for you through the registrar.
Location	• Does your institution offer the facilities you need? • Is there a regional initiative? See e.g. African Journals Online[74]. • Publishing cooperative, e.g. Scholarly Exchange[75]. • Commercial provider? There are many options and a good way to get an overview is to check the web hosting *review* sites, e.g. Web Hosting Geeks[76].
Speed	Can the web host provide sufficient speed for your needs?
Software	Depending on the journal management system you intend to use, check that the web host you choose supports the software you need.
Space	The disk space is the amount of storage assigned to the account by the web hosting provider. Bandwidth is the amount of traffic that the provider allows to be transferred to and from the website. Journals that include a lot of graphics would require more hard drive storage than a predominantly text based journal. Check how much your web host charges for extra space and bandwidth. Make sure you will be able to increase your storage space should you need to. However, disk space and bandwidth generally affect the price you are charged, so the more space you take, the more expensive is the monthly price.
Costs	Today there is a wide range of web hosting companies and it is easy to find a good supplier at a low cost.
Back-up	Make sure to ask the web host about their back-up routines. What procedures do they have and how fast can your site be restored in the event this is necessary?
Support	Check the 'uptime guarantee' the host offers. The uptime is the amount of time the server is up and serving your web pages. Web hosting companies strive for a 99.9% uptime, which means that there would be less than 2 minutes of downtime a day.
Move website to another host	Moving your website to another supplier should not be a problem but make sure you have your new site completely ready before you ask your registrar to transfer your domain name to the new host IP address.

[74]http://ajol.info/
[75]http://www.scholarlyexchange.org/
[76]http://webhostinggeeks.com/

Step 2: Register a domain name for this service, and plan for individual titles

A domain name is the address of a web site on the Internet. The domain name is used in URLs to access pages on a web site. URLs consist of three parts: network protocol, host name or address, file or resource location. These (substrings) are separated by special characters as follows:

Table 7: Domain name analysis

Parts	**protocol://**	**Host**	**/location**
Sample	http://	www.globalhealthaction.net	/index.php/gha/article/view/1947/2259

Choose to use an existing URL for the web server from which the journal will be reached, or apply for a new domain name e.g. http://www.journals.ac.za. The new domain name will allow the incorporation of journal specific domain names, e.g. http://aps.journals.ac.za, http://africanzoology.journals.ac.za, http://sajlis.journals.ac.za, etc. A brief and descriptive domain name is useful for branding; rather than remembering a very long and cumbersome URL (as those based on the web server typically are). Purchasing a domain also has the advantage of greater permanency. The domain name can be pointed to an underlying URL associated with the web server, and if for some reason a journal moves to a new server, the domain can be redirected without incurring any inconveniences or confusion for users.

Each domain name is followed by an extension like .ac, .net, .org, .edu, etc. Common extensions or suffixes, also called TLD (Top Level Domain) are (beside the national ones):

.ac Academic institution

.com Commercial business

.net Network of organizations

.org Not for profit

.edu Educational institution

Step 3: Brand the service

If it is a service provided by the institution, the university branding (logo) and a disclaimer note can be added. Example disclaimer: *This journal is hosted by the X University on request of the journal owner/editor. The X takes no responsibility for the content published within this journal, and disclaim all liability arising out of the use of or inability to use the information contained herein. We assume no responsibility, and shall not be liable for any breaches of agreement with other publishers/hosts.*

Step 4: Archive and Preserve

It is important to assure that the content of journals is archived safely and is accessible to future generations. This means that the data and files generated shall be protected against unforeseen disasters that could lead to their destruction and that it should be possible to migrate files to new standard formats as these emerge. As a scholar publisher the library/institution can facilitate archiving and preservation by creating a plan for the journal and following this.

Although it is difficult to say what the minimum requirements for archiving are, a general rule-of-thumb is that the more archives that preserve the journal content, the better. General archives as well as subject-based and institutional archives exist. In some cases laws concerning publications emanating from the home country may necessitate formal archiving with a national library archive or similar.

Key considerations

- Can editors and the journal comply with the criteria and requirements of the archiving agency? (e.g. PubMed Central requires files to be supplied in XML format based on the NLM DTD)
- Can the journal afford the costs?
- What archive is most important for the journal?

Step 5: Backup and monitor the journal system

A backup is a copy of a file created in case the original data is lost or damaged. The journal host has a responsibility to assure that the content of journals is protected from disaster through a regular backup. Unfortunately a number of unexpected yet possibly disastrous events can take place including: hardware malfunctions, software corruption, damaged directory structures, deleted files by mistake, files corrupted by viruses, new program installation that makes applications or files unusable, etc. , or by natural calamities such as fire, flood, earthquakes.

A backup can be done as follows:

- Perform a daily local backup.
- Copy/sync the local backup to two external backup servers (off site).

In addition to the backup it is important to monitor server performance and proactively identify possible problems, e.g. running out of server space, server is very slow, etc. In addition to a backup server use for example munin to setup a monitor server.

Key considerations:

- Are there backup procedures in place?
- What is backed up? Everything, folders, files etc?
- How often is it backed up? Daily?
- For how long are the backup copies kept?
- Are there copies at several locations?
- If necessary, is there a cost to recover files?
- If necessary, how long will it take to recover files?

Step 6: Marketing the journal hosting service

Potential users within the community need to be made aware of the new service that is offered. The service can be launched for example during international Open Access Week or any other special event (e.g. journal and/or society is fifty (50) years in existence), and thereafter a roadshow can be held, visiting each faculty/department. Another way of marketing is through hosting lunch hour sessions, and through creating training opportunities for smaller groups to get to know the software. Word of mouth is still the most effective, but individual invitations can be sent to editors of existing or potential journals that can be hosted or published through the university. Document the marketing strategy as part of the business plan.

Step 7: Train and support users

Sufficient training will need to be put into place. It can involve group training or individual training according to journal title. Although there are many help tutorials available on using the software, it might be good to have a help wiki page or customised training manuals for specific journal titles. A mailing list or discussion group can be setup to support editors and journal managers making use of the service, and to communicate new developments and important information. Communicate for example when a software upgrade has been scheduled, or if new features have become available following an upgrade.

2.6.2 Setting up an individual journal title

When setting up a specific journal title, the basic steps are:

Step 1: Application and signing of MoU (Memorandum of Understanding)

The library will require certain information before a journal can be set up. An example of information that might be required, which will also be helpful in terms of planning for the journal is available from the University of St Andrews[77] journal hosting service.

[77] http://www.st-andrews.ac.uk/library/services/researchsupport/journalhosting/planning/

The journal can also be expected to enter into an agreement with the library. An example memorandum of understanding, from Stellenbosch University Library and Information Service[78] (SUNJournals):

MEMORANDUM OF UNDERSTANDING

BETWEEN

[X University]

AND

[Journal Title]

Represented by the Editor-in-Chief [Name of Editor]

---

1. Introduction

In terms of the X University focus of broadening the knowledge base, the Library provides a hosting service for the publishing of scholarly journal literature using the open source software Open Journal Systems. Such a service will facilitate the sharing of research output with the widest possible audience. This Memorandum of Understanding (MoU) describes the agreement between the Library and **[Journal Title]** to work together to promote the publication of academically sound journal literature.

2. Purpose and scope of the MoU

The purpose of this MoU is to clearly identify the roles and responsibilities of the Library and **[Journal Title]** in the publication of scholarly journal literature. Furthermore, this MoU requires that **[Journal Title]** demonstrate an affiliation with X University.

This MoU also describes agreed principles and policies reflecting the spirit of co-operation between the Library and **[Journal Title]** and is not intended to be legally binding.

3. Definitions

Digital object identifiers (DOI)	A character string (a "digital identifier") used to uniquely identify an object such as an electronic document.
Open Access	The practice of providing unrestricted access via the Internet to peer-reviewed scholarly journal articles.
LibreOpen Access	Free Open Access with some additional usage rights.
Rich media	Interactive media. This normally refers to products and services on digital computer-based systems which respond to the user's actions by presenting content such as text, graphics, animation, video, audio, etc.
[Repository name]	X University's research database holding published research articles, and completed theses and dissertations.
LOCKSS	LOCKSS Program provides libraries with low-cost, open source digital preservation tools to preserve and provide access to persistent and authoritative digital content.

[78] http://library.sun.ac.za/English/services/oa/Pages/sunjournals.aspx

4. Responsibilities

The Library and **[Journal Title]** agree to work together to promote the publication of academically sound journal literature.

4.1. Responsibilities of the Library

The Library will provide mainly the expertise and server space to host the journal publication on condition that, if such facilities become too much of a financial burden for the Library, the costs incurred will be passed onto **[Journal Title]** (also see Section 6).

4.1.1. The Library will provide the server space to host the journal title under the domain extension [**http://... journals.ac.za**].

4.1.2. The Library undertakes to regularly upgrade all software associated with the hosting of the journal.

4.1.3. The Library will assume the role of super administrator and will provide all services associated with such a role.

4.1.4. The Library will provide training and on-going technical support for editors and journal managers in the use of the Open Journal Systems.

4.1.5. The Library will provide assistance in the setup of the journal including advice on editorial workflow, user management, copyright issues, and inclusion of rich media as part of an e-journal article.

4.1.6. The Library will acquire eISSN for the journal, and register the journal in the directory of Open Access Journals and other indexing systems.

4.1.7. The Library will coordinate the provision of digital object identifiers for individual journal articles as well as the registration of the title with CrossRef.

4.1.8. The Library assumes, within reason, responsibility for the implementation of appropriate software and methodologies to demonstrate and/or provide evidence on the dissemination and/or usage of content on [**the journal hosting service**].

4.1.9. The Library will also take responsibility for content archiving (for long-term preservation) of the journal in Open Journal Systems or LOCKSS.

4.2. Responsibilities of [Journal Title]

[Journal Title] will take full responsibility for the entire scholarly process and its entire workflow including layout of the final published issue and/or volume. **[Journal Title]** also takes responsibility for:

4.2.1. developing the look and feel of the journal. If necessary they will use a graphic designer to modify the look and feel of the template;

4.2.2. administrative management of the journal, and the appointment of a journal manager to manage scientific and technical aspects of the publication;

4.2.3. the marketing and advertising of the journal;

4.2.4. the editorial management (e.g. identifying reviewers, corresponding with authors);

4.2.5. article production (e.g. copy-editing, layout, proofreading);

4.2.6. production of the journal issue and/or volume;

4.2.7. subscription management (if the journal offers subscriptions in addition to Open Access); and

4.2.8. management of accounts payable or receivable (including author page charges where applicable).

5. General

5.1. It is strongly recommended that all journals hosted by the Library be made available in libreOpen Access.

5.2. The Library recommends that all articles be made available under a Creative Commons (CC-BY-NC or more permissive) license. You can visit http://za.creativecommons.org/ for latest status of the Creative Commons license.

5.3. All articles where the author (or member of the team that authored the article) is affiliated to X University a copy of the final version must be lodged with [**the institutional repository**].

5.4. The domain extension (journals.ac.za) allows for the journal to be relocated to another institution. In such instances, the Library needs to be given notice as per Section 8 below.

6. Funding

The Library currently carries the cost of providing the service which includes paying for server space, registration with CrossRef, payment for DOIs, etc. In the event of the financial cost becoming too great a burden, the Library reserves the right to levy minimal charges against **[Journal Title]** to relieve the burden.

It must be noted that journals that are hosted by the Library cannot charge X University staff and student page fees: staff and students of X University do not qualify for author page fees from the Open Access Publication Fund for articles published in titles held in [**journal hosting service**].

Furthermore, in the event that an editorial board accepts that its journal will be mirrored on a second site or hosted by another party, the full cost of hosting the journal on [**journal hosting service**] will be levied.

7. Disclaimer to breach of publication

The Library takes no responsibility for the content published within journals that are hosted on [**journal hosting service**], and does not accept any liability arising out of the use of or the inability to use the information contained herein. The Library, on behalf of itself and the University, assumes no responsibility, and shall not be liable for any breaches of agreement with other publishers/hosts.

This disclaimer must appear on the landing page of the journal title.

8. Termination of agreement

This agreement may be cancelled or terminated without cause by either party by giving 30 calendar days advance written notice to the other party. The notification must state the

effective date of termination or cancellation and include any final performance and/or payment invoicing instructions/requirements.

Any and all amendments must be made in writing and must be agreed to and executed by the parties before becoming effective.

9. Effective date and signature

This MoU will be effective upon the signature of the Library's and **[Journal Title]**'s authorised officials. It shall be in force from the date of signature to the termination date as per Section 8 above. The MoU is valid for a period of three years and has to be renewed.

Signatures and dates

Authorized signature from the Library	*Authorized signature from* **[Journal Title]**
Name of Library signatory	Name of **[Journal Title]** signatory Editor-in-Chief Role of **[Journal Title]** Signatory
Date	Date

End of Memorandum of Understanding

Step 2: Journal domain name registration

As mentioned earlier, the journal should be assigned a descriptive and brief URL for marketing and citation purposes, e.g. http://aps.journals.ac.za.

Step 3: Doi prefix registration

The DOI system[79] provides a technical and social infrastructure for the registration and use of persistent interoperable identifiers for use on digital networks. A digital object identifier (DOI) is a character string (a "digital identifier") used to uniquely identify an object such as an electronic document. Metadata about the object is stored in association with the DOI name and this metadata may include a location, such as a URL, where the

[79] http://www.doi.org/

object can be found. The DOI for a document is permanent, whereas its location and other metadata may change. Referring to an online document by its DOI provides more stable linking than simply referring to it by its URL, because if its URL changes, the publisher need only update the metadata for the DOI to link to the new URL (Wikipedia).

Each journal title will have to be assigned a unique doi prefix, and the open journal software system used will then generate a unique doi number for each article published in that journal. Once an issue has been published, the metadata can be uploaded to a DOI service such as Crossref[80].

Example doi prefix for a **journal title**:10.11564

Example of a unique doi assigned to a**journal article**:10.11564/0-0-431

Example of a unique doihyperlink to an article: http://dx.doi.org/10.11564/0-0-431

Test to see whether a doi resolves: http://dx.doi.org

Step 4: EISSN application

The *Online guide to Open Access journal publishing* describes the ISSN as an anonymous identifier associated with a periodical title; it does *not* contain any information as to the publisher or its location. For this reason, a new ISSN is assigned to a periodical each time it undergoes a major title change but not when it changes publisher.

To be able to identify a journal internationally it should preferably have an ISSN for each medium in which it appears; for instance, the online version and the printed version of a journal each have their own individual ISSN even though the content is the same. To show the relation between the two versions, the same ISSN-L should be added after each individual ISSN.

Example:

The Journal	**ISSN**	**ISSN-L**
Printed version	1748-1708	1748-1708
Online version	1748-1716	1748-1708
Other version (eg. CD-ROM)	1748-1734	1748-1708

Thus an ISSN is a unique identifier for a specific serial in a defined medium. The ISSN-L brings these separate ISSNs together, enabling identification and linking among the different media versions of a continuing resource – often a journal.

[80]http://www.crossref.org/

To get an ISSN/ISSN-L, contact a national ISSN centre or, if there is no such centre in your country, apply through the International ISSN Centre[81].

For an online journal, the ISSN should be visible on each page within the journal.

Step 5: Journal Setup

The following are identified by the *Online guide to Open Access journal publishing* as important aspects to address when setting up a journal. Each journal system will have a setup option in the journal management area, from where the journal can be prepared. Please refer to the web for the Online guide to Open Access journal publishing for detailed information.

- Design and construct website for journal title
- Create cover/design logo
- Create article layout
- Adopt style
- Write instructions to authors
- Define editorial team structure
- Recruit editorial board
- Adopt editorial policies
    - Profile the journal
        - Determine the journal type
        - Choose title
        - Determine type of content
    - Determine peer review policy
    - Define output policies
        - Define publication schedule
        - Decide size of annual volume
        - Adopt licensing/copyright policy
        - Adopt possible waiver policy
        - Adopt other policies
    - Write aims and scope
    - Design peer review workflow
- Create style sheet
- Define file formats
- Register for doi's (registered by journal hosting service, and not by individual journal title)
- Design production workflow

[81] http://www.issn.org/en/services/requesting-an-issn/

Step 6: Copyright and Plagiarism

The industry standard for Open Access journals is that the policy should (Online guide to Open Access journal publishing):

1) allow free access to original research; that is, provide access without restriction barriers (i.e. subscription fees, licensing fees, etc.), AND

2) allow re-use of content, at least for non-commercial/educational purposes.

The easiest and most recommended means of meeting this Open Access standard is to adopt one of the Creative Commons licenses[82], in particular the CC-BY (the most liberal license, allowing all forms of re-use) or the CC-BY-NC (excludes commercial re-use without permission). Creative Commons licenses are human and machine readable, and universally recognized, making them highly useful. The Creative Commons has a useful tool that allows you to select the license that is most appropriate for your needs.

It is very important that authors and other users of the journal clearly understand their rights and how they may use the content they find on the journal website. The journal's copyright/licensing policy should be easily located on the journal website and a statement should be placed in the footer of each article published in the journal.

To protect the journal against possible plagiarism, it is recommended that all articles considered for publication be submitted through a plagiarism detection system first. The plagiarism report can be attached as a supplementary file to the article record, and only made visible for journal managers/editors for future reference.

Step 7: Optimisation and registration with harvesters

According to the *Online guide to Open Access journal publishing*, being included and/or indexed in key databases is extremely important. Inclusion also increases the journal's visibility. Many indexing organs do not evaluate a journal until it has been published for some time. In addition, if the quality is not up to their standards they will not include the journal in their database. All indexing and database services have different criteria for acceptance and so applying for inclusion in them is a meticulous and continuous task. It is recommendable to create a short strategy for indexing and database coverage. This might involve applying first to these databases and indexes that are most likely to accept the journal and then applying to other services as the journal gains content and prestige.

[82]http://creativecommons.org/

Possible databases/indexes to register with:

Directory of Open Access Journals – DOAJ– for all journals

The DOAJ is probably the most widely-known database for Open Access journal content. Coverage includes all subject areas. The DOAJ encourages publishers to supply them with article metadata when a journal has been added into the directory. To recommend a journal title, go to http://doaj.org/doaj?func=suggest&uiLanguage=en

Ulrich's – for all journals

Ulrichsweb.com is the authoritative source of bibliographic and publisher information on more than 300,000 periodicals of all types — academic and scholarly journals, Open Access publications, peer-reviewed titles, popular magazines, newspapers, newsletters, and more from around the world. It is the most comprehensive source of print and electronic serials data available.

Titles in the Directory of Open Access Journals (DOAJ) are included.

To include your Journal, go to http://www.serialssolutions.com/en/about/contact and recommend a journal for inclusion.

Google scholar– for all journals

Google Scholar is a freely-accessible web search engine that indexes the full text of scholarly literature across an array of publishing formats and disciplines. You can find page policy and technical information for scholarly publishers and societies athttp://scholar.google.com/intl/en/scholar/publishers.htmlTo register a journal title, visit https://support.google.com/scholar/troubleshooter/2898950?rd=1

Open J-gate – for all journals

Open J-Gate currently aggregates metadata from 4000+ OA journals published in English and provides seamless access to the full-text on publisher websites. It covers both peer-reviewed as well as professional journals including trade and Industry journals.

Step 8: Impact and Statistics

Apply for indexing with ISI Thomson, which calculates and assigns impact factors. Complete the online form at

http://ip-science.thomsonreuters.com/info/journalsubmission/. For more information on the impact factor, visit http://wokinfo.com/essays/journal-selection-process/. Once accepted for inclusion, the journal will receive an impact factor first after a three year waiting period, as the impact factor is based on the number of citations of the two previous years.

The SCImago Journal Rank (SJR) indicator[83], developed by SCImago from the widely known algorithm Google PageRank™, shows the visibility of the

[83]http://www.scimagojr.com/

journals contained in the Scopus® database from 1996. Currently, Scopus covers 18,000 titles from more than 5,000 publishers.

Google Scholar[84] provides a measure of citations and is structured to capture citations to different versions of the same manuscript (e.g. citations to archived copies in addition to the publisher's final version). Google Scholar also captures citations from sources other than journals, including books and reports, which is why some research has indicated that for some fields, such as Humanities, it might provide a better tool than ISI Thomson.

Other forms of impact

According to the Online guide to Open Access journal publishing, fortunately the electronic publishing era is also impacting upon how impact can be measured and what impact might mean in various fields. Two trends are of interest in this respect. First, usage is becoming as interesting as citations. Second, bibliometrics are moving towards measuring impact at the article level rather than at the level of the journal.

In 2009 the Public Library of Science (PloS) introduced a set of article level metrics[85] for measuring impact including a number of alternative factors that contribute to impact. These provide a possible list of items that the journal could track.

Some examples of alternative factors that indicate impact:

- Usage data
- Page views
- Social networking links
- Press coverage
- Comments
- User ratings
- Page Ranks
- Backlinks
- Blog coverage
- Number of registered users/readers

Any and all of this information can be interesting to the authors publishing in the journal and potentially to those evaluating them. Any statistics (e.g. from Google Analytics or Piwik[86] linked to journal titles) and information one can provide to support the claim that the journal is an important source of information to the community it aims to serve can help support marketing efforts. Most publishers flag high impact factors, broad dissemination (e.g. read by researchers in 125 countries in 2008) and rankings (e.g. ranked 3rd in Microbiology by ISI Thomson), among other things.

Usage statistics can also inform how marketing goals are set. They indicate whether the journal is reaching the target audience and to what extent. At the

[84]http://www.google.com/intl/en/scholar/citations.html
[85]http://www.plos.org/cms/node/485
[86]http://piwik.org/

same time, tracking statistics will allow the journal to benchmark progress towards achieving marketing goals.

Key considerations:

- Use caution when presenting user statistics. Usage statistics can only provide an indication of usage level; they cannot provide an exact measurement of it. On the one hand, robots roam the internet and download material randomly, giving an article or journal hits that are not genuine and thus exaggerating user statistics. On the other hand, if articles are published under a Creative Commons License, articles will likely have been posted other places on the internet from which downloads are made that is difficult to track, leading to user statistics that underestimate usage.
- If ambitious about cleaning usage statistics, consider joining the Standardized Usage Statistics Harvesting Initiative, SUSHI[87]and Counter[88].
- Alerting readers to the "most accessed" or "most recently published" articles is a common practice today and seems to be appreciated by publishing authors and readers.
- Using Google Analytics or a similar weblog can help support efforts to collate and analyse usage information. Weblogs are records produced by the server hosting the journal or a service like Google Analytics that track the number of times the journal is visited as well as other information such as what browsers are being used, countries andcities that are accessing the journal, etc. It is also useful if the weblog used allows manipulation of the time period for which one would like to view statistics. Again, use caution when interpreting actual usage and dissemination as the weblog will also capture visits by robots.

2.7 LET US SUM UP

The world of open journal system has emerged to help scientists and researcher publish their work in a way accessible to those who are in most need of those works. These facilitate not only facilitate easy access, but also provide ease of operation for the manager of the online journal system to carryout work by performing multiple roles online or carrying out tasks online from various locations. This enables sharing of labour for production of quality journals. We discussed various types of Open Journal systems and how to choose one that is most suitable to you. We also discussed some general principles to install and manage open journal system. In the next unit, we will discuss some general trends and innovation in this area. But, before that, do practice the check your progress exercises.

[87]http://www.niso.org/workrooms/sushi
[88]http://www.projectcounter.org/

2.8 CHECK YOUR PROGRESS

1) Golden route to open access is through :
   a) e-books
   b) e-journals
   c) Institutional Repositories (IR)
   d) All these

2) Which of the following is **not** true in open access journals
   a) Submission is online
   b) Peer reviewing is online
   c) Publishing for an author is always free
   d) Access is always free

3) Which is not true in an open access journal
   a) Author retains the copyright
   b) Author loses all control
   c) Users are free not to accumulate the source & the author
   d) Author risks the integrity of her/his paper

4) Which of the following is not true: to qualify for inclusion in the DOAJ an open access journal:
   a) must have editorial quality control
   b) must provide free access to users
   c) may or may not be full text
   d) should have an eISSN

5) Which is not true of an OA journal
   a) an article once submitted/published cannot be withdrawn
   b) all actions and communications are recorded
   c) peer reviewing is also online
   d) full text is indexed.

6) Which is not e-journal software?
   a) HyperJournal
   b) OpenACS
   c) Koha
   d) GAPWorks

7) For raising revenue e-journals cannot
   a) sell space for advertising
   b) charge fee from authors
   c) charge fee from users for premium services
   d) charge fee from foreign users.

8) Put in order of their occurrence some of the following acts in writing the business plan of an OA journal as recommended by the *online guide to Open Access journal publishing*
   a) Marketing analysis
   b) SWOT Analysis
   c) Consider financial model
   d) Create a budget for first three years

9) Judge true or false:
   a) No one can launch an open access e-journals without an eISSN – T/F
   b) Since open access journals are free of cost to public so there is no need of their market. – T/F
   c) All open access systems provide the same facilities and rights to the users. – T/F

10) Tick the right answer: An eISSN provides specific information about its
   a) Publisher
   b) Place of origin
   c) Title
   d) Editor

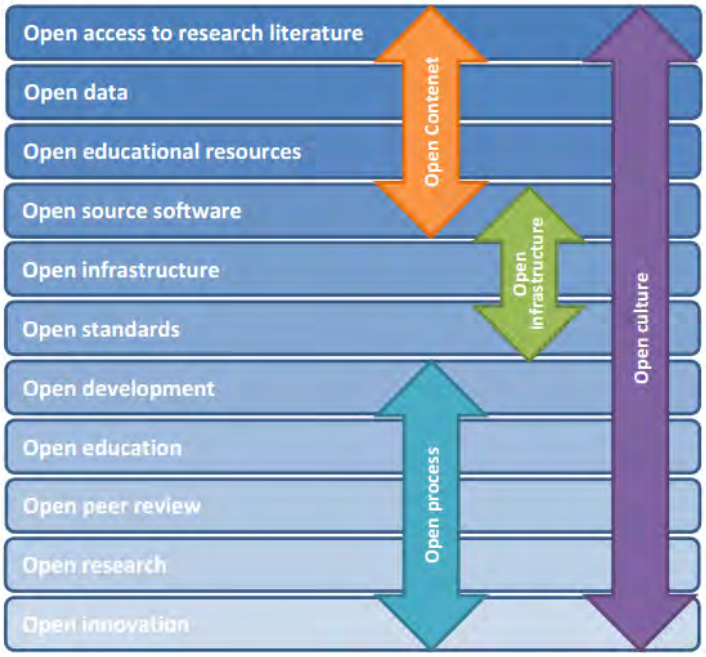
11) Which of the following is the most liberal creative commons license:
   a) CC-BY
   b) CC-BY-NC
   c) CC-BY- ND
   d) All are equal

UNIT 3 MORE ABOUT OPEN APPROACHES

Structure

3.0 INTRODUCTION

Besides open access journals and open access repositories, there are many other innovative approaches to openness that you as a library professional should be aware of. In this unit, we make an attempt to list some of these to assist you understand and articulate the developments in the area of open access to education and research. Open Access institutional repositories and Open Access journals are just two approaches to 'openness'. The policy document titled "Open 'as the default modus operandi for research and higher education"[89], that was produced by the e-InfraNet project in early 2013, follows a very broad approach to Open Access. According to this study 'Open' encompasses the following open approaches:



[89]http://e-infranet.eu/output/e-infranet-open-as-the-default-modus-operandi-for-research-and-higher-education/

3.1 LEARNING OUTCOMES

At the end of this unit, you are expected to be able to:

- Explain terms related to open access and openness in education and research.

3.2 OPEN EDUCATIONAL RESOURCES (OERs)

According to the UNESCO definition[90], Open Educational Resources (OERs) are any type of educational materials that are in the public domain or introduced with an open license. The nature of these open materials means that anyone can legally and freely copy, use, adapt and re-share them. OERs range from textbooks to curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and animation.

For example, if one is interested in learning about aeronautical engineering from a science expert at the Massachusetts Institute of Technology (MIT), visit lecture notes and videos from MIT courses[91].

The Vision for a Health OER Network in Africa[92] is an OER initiative started by experts in health science institutions across Africa to openly share health education materials. These materials are used by health professionals in Africa to enhance their knowledge and training, as well as by students and educators around the world.

Another OER started by the Delft University of Technology in the Netherlands[93] includes courses on clean water technology for developing countries. These resources have been updated by universities in South Africa, Singapore, the Antilles and Indonesia to include information on water treatment processes from their regions, making a collaborative resource on drinking water engineering available online to anyone who wishes to learn more.

3.3 OPEN DATA

Open Data is defined as research data (across different disciplines) that can be freely used, reused and redistributed by anyone – subject only, at most to the requirements to attribute and share-alike (OpenDefinition.org). Open Data can be made available through an institutional repository or linked to a journal article published in an Open Access journal, and can take on various forms such as data sets, maps, charts/graphs, video clips, calculations, sound recordings and many more.

[90]http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/what-are-open-educational-resources-oers/
[91]http://ocw.mit.edu/courses/aeronautics-and-astronautics/
[92]http://www.oerafrica.org/healthoer/AVisionfortheNetwork/tabid/1871/Default.aspx
[93]http://ocw.tudelft.nl/index.php?id=5799

The Open Knowledge Foundation[94] distinguishes between and defines the following types of Open Data:

The World Bank Open Data[95] resource provides for example free and open access to data about development in countries around the globe. Read more about Open Data from The Open Data Handbook[96], or visit a list of Open Data repositories listed by the Open Access Directory.

3.4 OPEN SCIENCE

The Open Knowledge Foundation Open Science Group[97] describes Open Science primarily as science that includes scientific knowledge that people are free to use, re-use and distribute without legal, technological or social restrictions. The Open Science Working Group activity focuses on three areas: open data (encouraging scientists to practice open notebook science), campaigning for Open Access and publishing open research. They build tools, apps, datasets and guidelines to facilitate all these aspects of open science. In general this movement is trying to make it easier to publish and communicate scientific knowledge.

A few Open Science projects include the Allen Brain Atlas[98], Galaxy Zoo[99] and The Encyclopaedia of Life[100].

Organisations practising or promoting Open Science include amongst others the Open Knowledge Foundation[101] and the Public Library of Science[102].

[94]http://okfn.org/opendata/
[95]http://data.worldbank.org/
[96]http://opendatahandbook.org/
[97]http://science.okfn.org/about-us/open-science-overview/
[98]http://www.brain-map.org/
[99]http://www.galaxyzoo.org/
[100]http://eol.org/

3.5 LINKED OPEN DATA (LOD)

The Semantic Web is a Web of Data — of dates and titles and part numbers and chemical properties and any other data one might conceive of (W3C[103]). "Linked Data is simply about using the Web to create typed links between data from different sources. These may be as diverse as databases maintained by two organisations in different geographical locations, or simply heterogeneous systems within one organisation that, historically, have not easily interoperated at the data level. Technically, Linked Data refers to data published on the Web in such a way that it is machine-readable, its meaning is explicitly defined, it is linked to other external data sets, and can in turn be linked to from external data sets" (Bizer, Heath & Berners-Lee, 2009[104]).

W3C describes DBPedia[105] as a typical example of a large Linked Dataset, which, essentially, makes the content of Wikipedia available in RDF. The importance of DBPedia is not only that it includes Wikipedia data, but also that it incorporates links to*other* datasets on the Web, e.g., to Geonames[106]. By providing those extra links (in terms of RDF triples) applications may exploit the extra (and possibly more precise) knowledge from other datasets when developing an application; by virtue of integrating facts from several datasets, the application may provide a much better user experience.

3.6 DATA (DIGITAL) CURATION

Digital curation involves maintaining, preserving and adding value to all forms of digital research data throughout its lifecycle (Digital Curation Centre[107]).

The active management of research data reduces threats to their long-term research value and mitigates the risk of digital obsolescence. Meanwhile, curated data in trusted digital repositories may be shared among the wider UK research community.

As well as reducing duplication of effort in research data creation, curation enhances the long-term value of existing data by making it available for further high quality research (Digital Curation Centre).

[101]http://okfn.org/
[102]http://www.plos.org/
[103]http://www.w3.org/standards/semanticweb/data#examples
[104]http://tomheath.com/papers/bizer-heath-berners-lee-ijswis-linked-data.pdf
[105]http://dbpedia.org/
[106]http://www.geonames.org/
[107]http://www.dcc.ac.uk/digital-curation/what-digital-curation

3.7 DATA MINING

In computer science Data Mining is also called knowledge discovery in databases. It involves the process of discovering interesting and useful patterns and relationships in large volumes of data (Clifton, 2010[108]). The field combines tools from statistics and artificial intelligence (such as neural networks and machine learning) with database management to analyze large digital collections, known as data sets. Data mining is widely used in business (insurance, banking, retail), science research (astronomy, medicine), and government security (detection of criminals and terrorists).Most types of data mining are targeted toward ascertaining general knowledge about a group rather than knowledge about specific individuals (Clifton, 2010).

The Open Directory Project[109] lists a number of data mining tools, as well as resources on data mining techniques applied to analysing and making decisions from web data.

3.8 LET US SUM UP

In this unit we introduced you to some of the related terms in the area of Openness, and we have not gone into depth, considering that you will pursue these separately. However, these are important aspects that many a times influences our decisions and action while serving our stakeholders.

From the perspective of this module, it is clear that Open Access can take various forms, of which Open Access repositories and Open Access journals are the most widely implemented – in line with institutional strategies. For successful implementation proper planning needs to be done to guarantee sustainable services which in the end will have the required impact. A needs analysis will assist with identifying the unique needs of the research community within an institution, followed by a business plan. When implementing an Open Access service at an institution, open source software is recommended since it is synonym with Open Access - because of the shared principle of 'openness'. The software platform – whether for an institutional repository or an open journal system – should address the needs of the users, and capacity needs to be built for the long term.

[108]http://www.britannica.com/EBchecked/topic/1056150/data-mining)
[109]http://www.dmoz.org/Computers/Software/Databases/Data_Mining/

3.9 CHECK YOUR PROGRESS

1) According to the policy document "*Open as the default modus operandi*.....".The open culture encompasses three sectors. Two of these are open content, open process which is the third one? _____

2) What sort of resources the World Bank Open Data provides
   a) Scientific data
   b) Financial data
   c) Foreign currency data only
   d) Development data of the countries

3) Tick the right answer:
   Data curation:
   a) Increases long term research value of data
   b) Reduces its obsolescence
   c) Adds value to the data.
   d) All the above

4) Tick the wrong statement:
   Data mining:
   a) Is same as knowledge discovery
   b) Discovers patterns of relationship in huge data
   c) Largely useful for insurance and banking
   d) Helps police to locate a criminal.

LIST OF ABBREVIATIONS

.ac	Academic institution
.com	Commercial business
.edu	Educational institution
.net	Network of organisations
APC	Article Processing Charge
APIs	Application Programming Interface
ASP	Active Server Pages
BOAI	Budapest Open Access Initiative
BSD	Berkeley Software Distribution
CC- BY- NC	Creative Commons by Non Commercial
CoP	Community of Practice
DDC	Dewey decimal classification
DOAJ	Directory of Open Access Journals
DOAR	Directory of Open Access Resources
DOI	Digital Object Identifiers
ECL	eduSource Communication Layer
eISSN	Electronic ISSN
e-Journals	Electronic Journals
GAP	German Academic Publisher
ICAAP	International Consortium for the Advancement of Academic Publication
IP	Internet Protocol
IR	Institutional Repositories
ISI	Institute for Scientific Information
ISSN –L	ISSN-Link
ISSN	International Serials Standard Numbers
JISC	Joint Information Systems Committee
JMIR	(The) Journal of Medical Internet Research
LCSH	Library of Congress Subject Headings
LoC	Library of Congress
LOCKSS	Lots of Copies Keep Stuff Safe
LOD	Linked Open Data
MIT	Massachusetts Institute of Technology

MoU	Memorandum of Understanding
NLM DTD	National Library of Medicines Document Type Definition (Tag Suite)
OA	Open Access
OAD	Open Access Directory
OAI-PMH	Open Access Initiative- Protocol for Metadata Harvesting
OASIS	Open Access Scholarly Information Sourcebook
OCR	Optical Character Regonition
OERs	Open Educational Resource(s)
OJS	Open Journal Systems/Software
OSI	Open Society Institute (New York)
OSS	Open Source Software
Pdf	Portable Document Format
PLoS	Public Library of Science
ROAR	Registry of Open Access Repositories
RSP	Repositories Support Project
RSS Feed	Rich Site Summary/ Really Simple Syndication
SCI	Science Citation Index
SJR	SCImago Journal Rank
SSOAR	Subject Specific Open Access Repositories
SUSHI	Standardised Usage Statistics Harvesting Initiative
SWOT	Strengths, Weaknesses, Opportunities and Threats
TLD	Top Level Domain
UDC	Universal Decimal Classification
URL	Uniform Resource Locator
W3C	World Wide Web Consortium
XML DTD	Extra Markup Language

KEYWORDS

Data Curation: Process of maintaining, preserving and adding value to all forms of digital research data throughout its lifecycle.

Data Mining: Process of discovering interesting and useful patterns and relationships in large volumes of data.

Open Access: A principle that allows researchers to access research that is digital, online, free of charge, and free of most copyright and licensing restrictions.

Linked Open Data: Links between open data from different open sources, across the World Wide Web.

Open Access Journal: A journal of which the articles can be accessed and used without any restrictions, and at no cost to the reader.

Open Access Repository: A set of services provided to make research output openly accessible, without any barriers.

Open Data: Research data (across different disciplines) that can be freely used, reused and redistributed by anyone – subject only, at most to the requirements to attribute and share-alike.

Open Educational Resources (OER): Any type of educational materials that are in the public domain or introduced with an open license. OERs range from textbooks to curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and animation.

Open Science: Science that includes scientific knowledge that people are free to use, re-use and distribute without legal, technological or social restrictions.

Open Source Software: Software whose source code is available for modification or enhancement by anyone (opensource.com).

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FEEDBACK TO CHECK YOUR PROGRESS QUESTIONS

Unit 1: Open Access Repositories

1) Data repositories
2) b- Koha
3) a. True
3) b. False
3) c. False (being proprietary)
4) c-LOC
5) b- UDC
6) c
7) c-Web articles
8) c-images
9) c-both
10) b-digitization expert
11) c,b,a,d

Unit 2: Open Journals

1) b-e-journals
2) c-Authors may be charged
3) a-Author does not retain the copyright
4) c-ejournal must be full text
5) a-Articles submitted/published can be withdrawn at any time
6) c- Koha is library management software.
7) d- Access is globally free.
8) a,c,d,b
9) 9a. False- It is only necessary for inclusion in the DOAJ
   9b.-False-They still need marketing and advertising
   9c- False-There are various categories of open access rights of the users
10) c- it is titled specific
11) a-CC-BY

Unit 3: More About Open Approaches

1) Open Infrastructure
2) d- development data of the countries
3) d- all
4) d- It does not help to identify an individual

This module has been jointly prepared by UNESCO and The Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi.