

Institutional Repositories and Skills Requirements, A New Horizon to Preserve the Intellectual Output: An Indian Perspective

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Abstract

The Institutional Repositories (IR) is a very powerful idea that can serve as an engine of change for any Institution. In this digital age, everyone wants contents and to be successful information service providers. So, Information Center and Libraries needs to develop services in such a way so that the end users may manipulate the content, as per their requirements. Therefore, in the present scenario, IR's are become an indispensable component for information and knowledge sharing in the scholar world. IR provides a method for capturing and maintaining today's electronic detritus so that tomorrow's scholars can understand the thinking behind the published record. Again, for the standard IRs each and every institution should have to equip its library professionals so that they can be able to cope up with the ever-growing changes in this part. In view of the above, this paper tries to explore the contents of IRs and skill requirement for the implantations of the successful Institutional Repository. The paper also discusses the benefits, standard, sustainability & funding, legal considerations to some extents. In addition with this the paper also tries to present the Indian current scenario of the IR. Authors have also discussed about the software's that are easily available to create and maintain in institutional repositories i.e. Open Source Software and Commercial Digital Repository Software. Further, brief about the current Indian scenario of IR and Failure of IR also discussed in brief.

Key words: Open source, Digital Software, Digital Library, Institutional Repository, Open Archives.

1. Introduction

Institutional repositories—digital collections that capture and preserve the intellectual output of university communities—respond to two strategic issues facing academic institutions: 1) they provide a central component in reforming scholarly communication by stimulating innovation in a disaggregated publishing structure; and 2) they serve as tangible indicators of an institution's quality, thus increasing its visibility, prestige, and public value. Institutional repositories are a part of an emerging movement towards open access to research information. Faculty and researchers at universities worldwide gather and interpret data, advocate new ideas, and extend human knowledge. This work is sometimes shared with other scholars and researchers as working papers, technical reports, and other forms of prepublication work. Although this scholarship may eventually show up

in a peer-reviewed journal or book, some may not. This preprint culture is strongest in the scientific and technical disciplines, but social scientists share similar works. One of the ways in which authors can self-archive their work is by depositing it in an institutional repository (IR). This is a digital collection of intellectual output, such as research articles, theses and teaching materials, produced by members of an institution, and stored on the institution's server. Not only does IRs allow for the free access to these materials, but they also provide a way of storing and preserving them.

2. Contents of an Institutional Repository

Since the IRs contain the intellectual output of the university and these output are very diverse and may include the pre-prints of articles or research reports submitted for publication, the text of journal articles accepted for publication, revised texts of published work with comments from academic readers, conference papers, teaching materials, student projects, doctoral theses and dissertations, datasets resulting from research projects, committee papers, computer software, works of art and photographs and video recordings, etc. in very simple an institutional repository may contain work of which copyright is owned by the author or university, or for which permission has been obtained to include a copy of the work in the repository.

The potential uses of Institutional Repositories content in other digital environment are countless. Institutional Repositories content does not need to 'sit' in the Institutional Repositories only. It should be brought into new digital environments where it can be easily consulted, represented and integrated with other current research and educational activities. The Institutional Repositories content also should be collected in creative ways and not rely solely on being submitted by individual faculty.

3. Benefits of an IR

Institutional Repositories by capturing, preserving and disseminating collective intellectual capital, serves as meaningful indicators of an institution's academic quality. It has been seen that much of intellectual output and value of an institution's intellectual property is defused through thousands of scholarly journals. An Institutional Repository concentrates the institutional product credited by an academic or other institution's researchers, making it easier to demonstrate its scientific, social and financial values. Thus, Institutional Repositories complements existing metrics for gauging institutional land productivity and prestige.

The Institutional Repository increased visibility reflects a high quality of scholarship; this demonstration of value can translate into tangible benefits including the funding from public and private sources that drives in part from an institution status and reputation. An institutional repository has many benefits such as;

- I. It provides long-term solution;

- II. Improve scholarly communication;
- III. Remedying the weakness of self-archiving i.e. lack of proper security, long-term preservation, and wasting faculty time;
- IV. Extending the work of disciplinary repositories;
- V. Improve online teaching both on campus and via net.

4. Software for IRs

IBM issued Digital Library Software in 1991 to manage collection of digital files. IBM groundbreaking technology grappled with key issue of storage, maintenance, retrieval and display digital content. This was the first effort towards the digital repository software and it showed path to other. There is now software easily available to create and maintain in institutional repositories and as a result the challenges in setting up an institutional repositories are now seen as being less to do with technology and more to do with managerial, organisational and cultural issues. Some systems are open source, while others are commercial. There are number of software's available for creating/developing institutional digitals repositories; the brief of the some are given below;

4.1. DSpace

DSpace (<http://www.dspace.org>) was developed jointly by the MIT library and HP. DSpace modestly describes itself as a groundbreaking digital repository system. It captures, stores, indexes, preserves and redistributes an organizations research material formats. DSpace support institutional repositories and electronic records management. DSpace is being used worldwide to meet many digital archiving needs.

4.2. E-Prints

Eprints (<http://www.eprints.org>) is the original digital repository software developed by the University of Southampton to manage an open archive. Eprints was the Open Archives Initiative (OAI) –Complaint repository software. It typically supports collections of pre-prints and technical reports often subject based in scope. Recently this software is being used/implemented to manage multidisciplinary institutional archives.

4.3. Fedora

Fedora (Flexible Extensible Digital Object and Repository Architecture) is a digital repository system developed jointly by Cornell University Information Science and University of Virginia Library as project. The Fedora projects goal is to provide open-source repository software and related services to serve as the foundation for many different types of Information Management system. Fedora is not a complete system such as DSpace and Eprints whereas it provides an infrastructure upon which

services can be developed. It also promotes the buildings of customs tools to expose the repository in creative ways.

4.4. Greenstone

Greenstone (<http://www.greenstone.org>) is software for building and distributing digital library collections. This software is produced by the New Zealand Digital Library Project at University of Waikato and developed and distributed in cooperation with UNESCO and the Human Info: An NGO. It has been issued as Open-Source, multilingual software under the GNU General Public License. Greenstone do not only serve and harvest documents and collections over OAI-PMH but collections may be exported to or imported from METS (Metadata Encoding and Transmission Standards).

Apart form the above Open Source Software, some commercially developed software also available for digital repository like CONTENTdm®, Digi Tool, EN Compass, Hyperion, Meta Source and VITAL.

5. Current IR Developments in India

In India, the efforts towards adopting open access initiative have already been started. But there are some hurdles and misunderstandings about open access among the Indian research community. These are

- ◆ Lacks of expertise in every organization to promote creation of institutional archives and encourage scientists to place their papers in them.
- ◆ Lack of infrastructural facilities like hardware and connectivity of high bandwidth
- ◆ Scientists are under the impression that the editors of renowned journals may not accept the archived papers.
- ◆ The scientists are not aware of the fact that the attitudes of the journals are now changing and renowned journals also permit the authors to archive both preprints and postprints.

Table No.1 shows major Institutional Repositories in India

Name of IRs	URL	Software used	More Info.
Bioinformation	http://www.bioinformation.net/	Other Softwares (Various) (OAI)	The journal specifically invites articles describing new biological insights based on primary or derived data. 100% freely accessible full text (estimate). Included in DOAJ services.
Digital Library @ISI Bangalore	http://library.isibang.ac.in:8080/dspace/	DSpace	This is an institutional repository providing access to the published output of the Indian Statistical

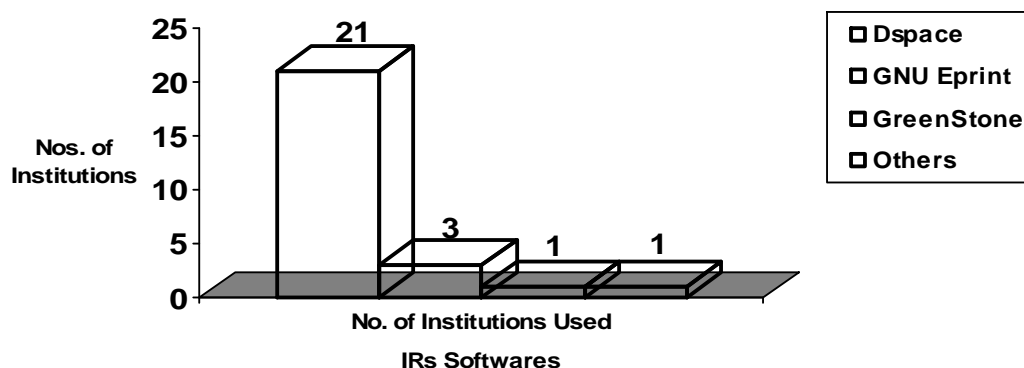
			Institute, Bangalore. The site can be relatively sluggish in terms of accessibility speeds to the content.
Digital Repository of RRI	http://dspace.rrri.res.in/	DSpace	This contains the research publications of the faculty and students of the Raman Research Institute. The collected papers of C.V. Raman and the historical records of the institute (Annual Reports and Newspaper Clippings) are also housed here.
Digital Repository Service@NIO	http://drs.nio.org.drs/	DSpace	DRS@nio tries to collect, preserve and disseminate different institutional publications. You can search, browse and access publications of NIO from this collection.
Dspace@dce	http://202.141.12.109/dspace/	DSpace	Dspace@dce collects, preserves and disseminates the intellectual output of Delhi College of Engineering to the global audience.
Dspace@IBS Ahmedabad	http://202.131.96.59:8080/dspace	DSpace	The institutional repository of ICFAI Business School, Ahmedabad. Registered users can set up email alerts to notify them of newly added relevant content.
DSpace@IIA	http://prints.iiap.res.in/	DSpace	This site is an institutional repository of Indian Institute of Astrophysics providing access to the publication output of the organization.
DSpace@IIM Kozhikode	http://dspace.iimk.ac.in/	DSpace	IIMK's institutional repository enables the Institute community to archive their preprints, post prints and other scholarly publications. We expect this service to facilitate the Institute researchers in self-archiving and long-term preservation of their scholarly publications.
DSpace@IITB	http://dspace.library.iitb.ac.in/dspace/	DSpace	This is an institutional repository for the Indian Institute of Technology

			Bombay, providing access to its research output.
Dspace@INFLIBNET	http://dspace.inflibnet.ac.in/	DSpace	Content: postprints, preprints, news clippings, conference articles, training materials and other scholarly publications
Dspace@INSA	http://61.16.154.195/dspace/	DSpace	This site is an institutional repository of Indian national Science Academy providing access to the publication output of the organisation.
Dspace@NCL - Pune	http://dspace.ncl.res.in/	DSpace (OAI)	Dspace@NCL repository enables the Institute community to deposit their preprints, postprints and other scholarly publications using a web interface, and organizes these publications for easy retrieval
Dspace@NCRA	http://ncralib.ncra.tifr.res.in:8080/dspace/	DSpace	This is an institutional repository providing access to the research output of the NCRA. Some items are only available to registered users.
Dspace@nitr	http://dspace.nitrkl.ac.in/dspace/	DSpace	Dspace@nitr collects, preserves and disseminates the intellectual output of NITR to the global audience. Presently, it archives journal articles, pre-prints and conference papers authored by NITR researchers.
Dspace@Thapar University	http://dspace.tiet.ac.in:8080/dspace/	DSpace	Dspace@TU facilitates interaction amongst TU students, faculty and staff as well as people outside the campus who might be interested in academic, research and administrative activities at TU.
DU Eprint Archive	http://eprints.du.ac.in/	DSpace	DU Eprint Archive is running on GNU Eprints repository-creating software, which generates eprints repositories that are compliant with the Open Archives Protocol for Metadata Harvesting OAI 1.1 and 2.0.

Edt@IISc Bangalore	http://etd.ncsi.iisc.ernet.in/	DSpace	This site is a university repository providing access to the publication output of the institution and the counterpart of ePrints@IISc, the research publications repository of IISc.
eGyankosh	http://www.egyankosh.ac.in/	DSpace	This is a learning object repository for the Indira Gandhi National Open University. Many items are only accessible to registered users only.
Eprint & Etd @IIT Delhi	http://eprint.iitd.ac.in/dspace/	DSpace	Publicly accessible repository (archive) where all the work published by IIT Delhi Faculty members/researchers/ authors affiliated with the Institution can be posted online.
Eprints@ IISc Bangalore	http://eprints.iisc.ernet.in/	GNU Eprints(OAI)	Eprints@IISc repository enables the Institute community to deposit their preprints, postprints and other scholarly publications using a web interface, and organizes these publications for easy retrieval.
Etd@IIT Bombay	http://www.library.iitb.ac.in/~mnj/etd/	Greenstone	The Institute has established electronic submission of theses and dissertations (ETD) since 1999 as a signatory to the "Networked Digital Library of Theses and Dissertations (NDLTD)" initiative, with the Virginia Tech University as leader of this worldwide project.
Indian Institute of Information Technology GNU EPrints (OAI)	http://eprints.iiita.ac.in/	GNU Eprints(OAI)	Indian Institute of Information Technology GNU EPrints (OAI) collects, preserves and disseminates the intellectual output of IIIT Allahabad to the global audience. Presently, it archives journal articles, pre-prints and conference papers authored by IIITA researchers.
Kautilya@ IGIDR	http://oii.igidr.ac.in:8888/dspace/index.jsp	DSpace	This is a digital repository of conference proceedings, thesis and dissertations and research articles, etc

			hosted at Indira Gandhi Institute of Development Research, Mumbai, India.
Librarians' Digital Library	https://drtc.isibang.ac.in/	DSpace	This is a subject-based repository providing access to publications in Library and Information Science from Indian Statistical Institute.
OpenMED@NIC	http://openmed.nic.in/	GNU Eprint	OpenMED@NIC is an open access archive for Medical and Allied Sciences. Here authors / owners can self-archive their scientific and technical documents.
Vidyanidhi Digital Library, University of Mysore	http://dspace.vidyanidhi.org.in:8080/dspace/	DSpace	Vidyanidhi (Meaning 'Treasure of Knowledge' in Sanskrit) is India's premier Digital library initiative to facilitate the creation, archiving and accessing of doctoral theses.

Graph: 1. Commonly Used IR Software: Indian Scenario



The data was collected from the website of above mentioned university/institutions. The details are explored in the above graph, drawn from the Table No. 1. In examining the software used to support IRs, considerable variation was found in the level of software diversity between the university or institutions; only a few packages were used, most notably the DSpace software, which according to the above study is used in at least 21 of the 26 repositories, and Eprint, which is used in 3 of the 26 repositories studies.

5. Skills Requirements

Institutions vary greatly in how the work of the repository is distributed. Hence this document is not intended as the skill set required of a particular repository post but rather the skills, knowledge and abilities required for the development and management of a successful institutional repository.



Figure 1. Skills Requirements for IRs

5.1. Management

Ability to:

- ◆ Manage the repository budget and respond to user needs in line with resources
- ◆ Develop a strategy and costing for the future development of the repository
- ◆ Source funding opportunities for repository projects where appropriate
- ◆ Manage the repository service by identifying goals and future strategies for improvement in the repository service
- ◆ Develop workflows to manage the capture, description and preservation etc. of repository outputs
- ◆ Manage the day-to-day running of the repository including any mediated-deposit service (if required or possible) or self-archiving by authors

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- ◆ Coordinate and manage activities of repository personnel and coordinate repository development with associated departments
 - ◆ Set up test collections and user satisfaction surveys to evaluate the service and report on findings where appropriate
 - ◆ Monitor deposit; download and other usage indicators to identify the impact and success of the repository and areas for improvement in the service. Produce usage reports where appropriate.
 - ◆ Manage user expectations to ensure that expected service delivery is achievable
 - ◆ Handle comments, complaints and relationships if service delivery does not meet user demand. Manage other difficulties as they arise.

5.2. Software

Familiarity with:

- ◆ Standard web-based software systems including (but not limited to) Unix, Linux, SQL Server, MySQL, SGML, XML, PHP, JAVA, PERL
- ◆ At least one major repository software including (but not limited to) EPrints, DSpace, Fedora, OPUS
- ◆ Web-based software and databases
- ◆ Ability to:
 - ◆ Customise, deploy and manage repository and associated software
 - ◆ Arrange and carry out testing of the system and evaluate results
 - ◆ Design and develop repository interface and tools
 - ◆ Identify and develop value-added services such as community and collection pages in the repository

5.3. Metadata

Familiarity with:

- ◆ Relevant metadata standards including (but not limited to) Dublin Core, MARC, METS, MODS, OAI-PMH

Ability to:

- ◆ Identify or develop appropriate metadata and other standards

- ◆ Liaise and test implementation with cataloguing team where appropriate
- ◆ Ensure compliance and monitor metadata quality on an ongoing basis

5.4. Storage & Preservation

Familiarity with:

- ◆ Current best practice procedures and external advice and resources

Ability to:

- ◆ Work with IT Services on the use of their network storage and on backup requirements
- ◆ Scope the long term storage requirements of repositories and work with IT services to meet backup requirements
- ◆ Work with institutional personnel including (but not limited to) University Records Manager, Archivist and IT services, as well as external organisations in order to
 - ◆ Identify best practice and establish requirements for preservation
 - ◆ Develop a policy for how different materials should be preserved (or not)

5.5. Content

Familiarity with:

- ◆ Relevant IPR issues
- ◆ Needed when accepting material for the repository
- ◆ Needed to develop guidelines to ensure consistent good practice
- ◆ Must be able to provide advice on relevant IPR issues

Ability to:

- ◆ Develop a content policy for the repository to include (but not limited to)
- ◆ The types of materials that can be deposited
- ◆ How different materials should be managed within the repository
- ◆ How embargoed materials are to be managed
- ◆ How withdrawals of deposited items are to be managed
- ◆ Increase the amount and quality of items deposited in the repository by
- ◆ Identifying suitable publications for deposit by checking personal and

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- ◆ Departmental web pages and following the development of new areas of research in the institution
 - ◆ Encouraging authors of suitable publications to deposit their work
 - ◆ Explaining to authors how to self-archive OR where mediated deposit is provided
 - ◆ Asking authors for files from authors and convert to appropriate formats for
 - ◆ Deposit (e.g. Word to PDF) and deposit in the repository on their behalf

5.6. Liaison

5.6.1 Internal

Ability to:

- Liaise with a wide variety of departments and interest groups (e.g. students) to
 - ◆ Identify high-level and longer-term institutional strategies, opportunities and needs of the institution which may be met by the repository
 - ◆ Identify and address any areas of concern or overlap between the repository and stakeholder requirements or other interests within the institution
 - ◆ Build awareness and confidence in the repository service
 - ◆ Develop practical policies and procedures to ensure the repository becomes embedded in the research processes of the institution
 - ◆ Liaise with a wide variety of departments and interest groups in particular
 - ◆ Senior institutional managers must be aware of the benefits of the repository to the institution and must have confidence in the ability of the repository personnel to deliver a key service tailored to the needs of the institution
 - ◆ Work with the Research Support/Grants Offices to share information about changing contract and funder requirements
 - ◆ Work with IT services to maintain repository hardware and software, to achieve buy-in by IT services into the repository.
 - ◆ Work with the library to identify key information and services needed by researchers from the repository and to ensure that repository staff are aware of any feedback from users
 - ◆ Initiate contact with individual academics and research groups in the institution to identify their needs from the repository and develop their involvement in the repository
 - ◆ Where a repository is to hold e-theses, liaise with the Graduate School to encourage/ensure deposit of e-theses and to identify and address any potential copyright issues

5.6.2. External

Ability to:

- ◆ Promote the repository outside the institution as a showcase of the institution's work. At a minimum, the repository should be registered with OpenDOAR, OAI and other relevant service providers such as the OAIster and BASE search engines
- ◆ Liaise with external stakeholders in open access and repository development, including (but not limited to) funding agencies; publishers; repository groups or federations; service providers; learned societies; international peers and related organisations

5.7. Advocacy, Training & Support

Ability to:

- ◆ Develop an advocacy programme to address the full spectrum of stakeholders to create a broad culture of engagement within the institution
- ◆ Develop advocacy and publicity materials for use within the institution e.g. webpages, guides, FAQs and presentations
- ◆ Be proactive in publicizing repository developments via institutional newsletters, seminars and email alerts etc
- ◆ Assess the training needs of specific stakeholder groups within the institution
- ◆ Develop suitable training programmes and materials for those groups
- ◆ Organise and run training sessions. Topics may include (but are not limited to)
- ◆ Introduction to Open Access
- ◆ How to deposit items into the repository
- ◆ How to search for OA materials
- ◆ Answer queries and provide advice as appropriate

5.8. Current Awareness & Professional Development

Familiarity with:

- ◆ Current trends in the repository community, particularly with respect to events within the UK, through attendance at relevant conferences, meeting and reading relevant email lists and professional literature
- ◆ Developments within the general research community and the UK higher education system to identify potential implications for the repository

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- ◆ Technical and repository developments through attendance at relevant workshops and training courses

Ability to:

- ◆ Participate (where appropriate) in new developments, best practice, and relevant projects within the repository community

6. Key Issues Developing Repositories

Here are some of the key issues to consider when developing repositories:

- ◆ The institutional culture
- ◆ The scope of the repository
- ◆ Content
- ◆ Access levels
- ◆ Legal aspects
- ◆ Standards
- ◆ Sustainability
- ◆ Funding

Institutional culture depends on how the organization is structured as well as how much collaboration and trust exists within an institution. In academic organizations, faculty belongs to departments, disciplines, and research groups. Academic competition may be fiercer in some universities than in corporations. In an internally competitive environment where cooperation and trust are not nurtured, building a repository will become more difficult. Faculty will not contribute willingly to a central repository unless they have been consulted and trust the process. Faculty need to be convinced that contributing to a repository will enhance their reputations in their disciplines and result in wider dissemination of their work.

Repository advocates must decide early on the purposes and scope of the repository and communicate them to all affected parties. The sooner participants can buy into the process, the better. Will the repository be central? Distributed? Will it cover only parts or all of the organization? For some institutions, community-based repositories will work well. Large and complex institutions will need consensus on key issues and technical standards. A repository may be limited to self-archiving by authors or may include the intellectual output and business and administrative documents for the whole institution. Many institutions have treasures known to only a few people. Repositories provide the means for unearthing these treasures and bringing them to light.

Decision-making on content can become a contentious issue. Criteria for deposit into the repository could come from each community or from a central body with input from the participants. The Dspace project at MIT includes articles, reprints, technical reports, working papers, conference

papers, e-theses, data sets, image files, audio and video files, and reformatted digital library collections. Policies for the deposit of content and who may contribute content come from each MIT community, but the Dspace guidelines specify that material must be “education-oriented,” in digital format, and produced by an MIT faculty member. The author/owner agrees to give MIT permission to distribute and preserve the material. Access policies are determined by MIT [<http://libraries.mit.edu/mit/policies/content.html>].

7. Legal Considerations

Librarians and administrators responsible for operating and maintaining repositories need to ensure that all legal requirements are met. These requirements include appropriate software and content licenses. At MIT, authors must sign a nonexclusive license granting MIT permission to deposit, distribute, and preserve repository materials. Many universities have comprehensive intellectual property policies setting forth the responsibilities of faculty and administration. Corporations and not-for-profit organizations may have formal intellectual property policies. In some cases, intellectual property issues may be covered in employment contracts. If there are limits on distribution of materials or access levels, the repository software needs to build in those limits to ensure compliance. Academic institutions usually opt for open access but may have to restrict access for some research activities. If student portfolios are included in the repository, privacy considerations may limit access.

8. Standards

Interoperability requires that repositories employ standards developed to handle issues associated with open access. These standards include the Open Archival Information System (OAIS) Reference Model [<http://www.rlg.org/longtermoasis.html>], Open Archives Metadata Harvesting Protocol (OAI-PMH) [<http://www.openarchives.org/OAI/openarchivesprotocol.html>], and the Metadata Encoding and Transmission Standard (METS) [<http://www.loc.gov/standards/mets/>].

9. Sustainability and Funding

Maintenance and sustainability are key issues that involve the long-term commitment of money by management. A repository cannot run by itself. It needs constant attention. Maintenance of content, software, and accessibility can change. IT staff and librarians need to know the consequences of changes in hardware, software, and standards and be able to adjust accordingly.

Librarians need to prepare to handle problems arising from a faculty member or key person leaving the organization, faculty collaborating with faculty in another institution or group of institutions, or with government or industry. Having clear policies concerning deposit, accessibility, and other anticipated contingencies will ease the problem-solving process.

Repositories cannot be sustained without long-term infusions of funds. Everyone involved in a repository needs to understand that the project has become part of their everyday lives and will

require attention and funding in perpetuity. Too often managers in corporations seem unable to look beyond the quarter's bottom line and shy away from long term commitments. Their reluctance to commit funds is exacerbated in an uncertain economy. Many managers in academe emulate their corporate colleagues through their reluctance to raise and dedicate enough money to ensure that the repository is funded at an appropriate level forever.

10. Collaboration

Librarians, archivists, faculty, and information technology staff have gained increased understanding of each other's work and learned to work more collaboratively in recent years. Each group now recognizes and appreciates the expertise and creativity of the others. The talents and commitment of time and energy from each group are essential to the success of a repository project. Creation and sustainability of a repository heavily depend on thinking together and learning what others on the team think so decisions can be made within their working context.

In simple terms, success in building a repository involves eight "C" words:

Comprehension: It means that all members of the team must share a common vision and understanding of the purposes and scope of the repository.

Collaboration: It involves thinking and working together, with different people contributing their different talents, working with others to solve problems, and making important decisions.

Context: Context is each person's worldview and working environment. Each person has a unique mind-set based on background, education, and experience. Thinking and working together in a non-threatening atmosphere helps people integrate other contexts into their own.

Change: Repositories involve change in the way research is disseminated, preserved, and published. This change requires faculty to deposit their research results, data sets, and other materials in the repository — a new step in the research process. In corporations, management may require staff to deposit items, such as strategic plans, marketing plans, and working papers.

Caring: It motivates the desire to share research results and joint scholarly endeavors, preserve history, and provide knowledge and information needed for future generations to learn. Caring leads

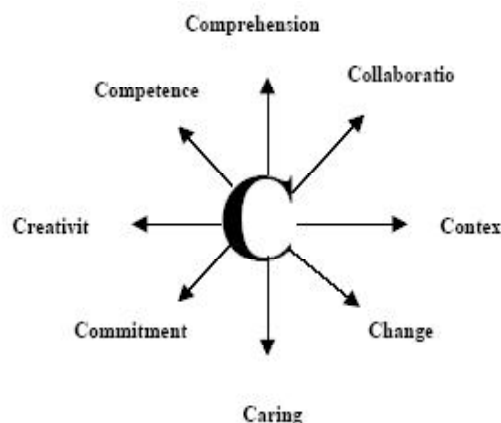


Fig. 2. Eight "C" for successful IRs

to the commitment to deposit one's scholarly work in the repository, encouraging others to do likewise by contributing ideas and energy.

Commitment: Managers show their commitment by understanding that repositories will grow and require support and funding in perpetuity.

Creativity: It involves imagination and the ability to visualize a new way of doing things. New ideas can come from anywhere — from individuals or groups of individuals.

Competency: It means knowing how to make the repository work for all its constituents. Librarians and archivists need to carry their collection development skills and operational know-how to the repository project. Information technology staff demonstrates their competencies by knowing about the software, hardware, networking, and standards needed to make the repository serve everyone.

11. Failure of Institutional Repositories

An Institutional Repositories can fail over time for many reasons; policy, management failure or incompetence or technical problems. A failure of Institutional Repositories can result in the disruption of access, or worse, total and permanent loss of materials stored in Institutional Repository.

The Institutional Repositories today, there is much less redundancy then we have in our systems of print publication and libraries, so any single institutional failure can cause more damage.

12. Conclusion

Scientists, Librarians and Library professionals in developing countries like India need to aware themselves about the new opportunities provided by Information and Communication Technologies. One way of doing this is to adopt the "open access" approach for their repository. Central and State Government Departments, Private Sectors, Industries, Academic Institutions and Research Institutes in India should take an initiative and come up with their Institutional Repositories so that the research in India can be widely accessed by scholarly community through out the world. Institutional repositories offer a strategic response both to the opportunities of the digital networked environment and the systemic problems in the today's scholarly journal system. This response can be applied immediately, reaping both short-term and on-going benefits for universities and their faculty and advancing the transformation of scholarly communication over the long term. Institutional repositories represent the logical convergence of faculty-driven self-archiving initiatives, library dissatisfaction with the monopolistic effects of the traditional and still-pervasive journal publishing system, and availability of digital networks and publishing technologies. In a digital age to be successful information services providers, library need to develop services that allow, creators, content managers and want users to manipulate the content in ways they desire, In order to support and cater the need of users demands, content managers such as librarians must be able to send/service, store, organise and archive content.

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