



National Seminar on Emerging Trends in
ERMS in College Libraries, September 27 & 28, 2013



Best Practices for the Development of Institutional Repository: A Case Study of ePrints@UoM

I.R.N. Goudar

Visiting Professor and Library Adviser
Mysore University Library, University of Mysore, Manasagangotri, Mysore
goudarishwar@gmail.com

N.N. Prasad

Librarian
Library and Information Centre, National Institute of Mental Health and Neuro Science
Bangalore
nisargaprasad@gmail.com

Nandakumar

Site Administrator
ePrints@UoM, Mysore University Library, University of Mysore, Manasagangotri, Mysore

Abstract:

The Institutional Repository (IR) is one of open access channel for archiving and dissemination of scholarly output of an institution or a community as defined by its developers. This paper examines the emerging trends of university-based digital institutional repositories designed to capture the scholarly output of an institution and to maximize the research impact of research output. Apart from discussing various characteristics and features of IR, the best practices adopted for the development such a repository at University of Mysore have been highlighted.

Keywords: *Open access; Digital Institutional Repository; IR Development; Characteristics; Features; Best Practices; University of Mysore*



Introduction:

The academic and research activities of any organization result in to scholarly publications and get disseminated through various publication channels like conferences, working papers and peer reviewed journals. Digital environment has brought ocean change in publishing, archiving and disseminating the scholarly communications. Digital only environment has raised many more tricky issues concerned to future of scholarship. The publications of an institute unless archived through its digital repository, either become part of vast ocean of literature or are buried for not being able to be retrieved after few years. Many institutions strive hard to trace their own publications as a result of the research carried over the years unless preserved appropriately. The literature published in high quality and international journals usually gets the visibility through indexing and abstracting journals and search engines like Google. The literature getting into less popular, local, print only journals and published through conference proceedings usually do not get wider visibility. As defined by Budapest Open Access Initiative, the OA makes *"freely available the scholarly literature on Internet for the public, permitting to read, download, copy, distribute, print, search or link to the full text, crawl them for indexing, pass them as data to software or use them for any other lawful purpose, without financial, legal or technical barriers other than those inseparable from gaining access to the Internet itself"*.

Institutional Repositories:

The Institutional Repositories serve as one of the main OA channel for archiving and disseminating the e-scholarship of an institution or a group of organisations and community concerned. The IR design and development world over is lead by library profession to a large extent. The definition by Lynch, 2003 *"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"* is very appropriate in the context of this paper. The characteristics of an IR include – IR is Institution-based; Scholarly material in digital formats; Cumulative and perpetual; and Open and interoperable. All the stake holders of the scholarly publications viz. Authors, Institutions, Information seekers, Funding agencies in particular and society in general can reap benefits of IRs including the strategic ones.

The scholarly output of university could be in different formats like journal article, conference paper, thesis, research data, presentations, course materials, book reviews, technical reports and patents. The journal articles added to IR may be a preprint before undergoing review process or a post print after review process and in the latter case could be PDF with final camera ready copy or even the publishers PDF depending upon the publishers policy for allowing the deposition of papers in IRs. The development of an institutional repository (IR) is one of the more complex projects that librarians may undertake. While many librarians have managed large information system projects, IR projects involve a larger stake holder



group and require support from technical services, public services and administration to succeed. Institutional repositories represent an integral part of the long-term strategies of the universities in question, in particular as these have to redesign their publishing and library policies to take into account the totally new conditions created by the Internet. While the university's own production of thesis and working papers can easily be put up on IRs, the papers presented in seminars/conferences and published in scholarly journals form the core collection. The use of project management practices beyond technical development, and the inclusion of the campus community are identified as key factors in the successful development of IRs.

A number of software packages both proprietary and free on net like DSpace, GNU-EPrints, Fedora are available for archiving and managing digital collections. The Interoperability Protocol OAI-PMH facilitates harvesting of metadata from IRs resulting in to single platform search facility with links to full texts of the items in the respective IR. The well known metadata harvesters are: OAIster maintained by OCLC, Bielefeld Academic Search Engine (BASE), maintained by Bielefeld University Library and arXiv for physics, mathematics and computer science literature. While the OpenDOAR, the Directory of Open Access Repositories lists >2200 IRs, Registry of Open Access Repositories (ROAR) has registered 3483 repositories set up in different countries including 62 and 98 Indian IRs respectively. However equal number of Indian repositories, especially the ones set up by ISRO and DRDO institutes have been made available through their institutional LANs and not listed in any of the directories. The Cybermetrics Lab, a research group of the Consejo Superior de Investigaciones Científicas (CSIC), Spain ranks the IRs world over. This annual exercise provides a list of mainly research-oriented repositories arranged according a composite index derived from their web presence and the web impact (link visibility) of their contents, data obtained from the major commercial search engines. In the recent ranking the arXiv.org gets the 1st rank world over. Five Indian IRs viz. the E-thesis IR of National Institute of Technology, Rourkela; Open Access Repository Publications of Fellows of the Indian Academy of Sciences; Indian Institute of Science Bangalore Institutional Repository; Central Marine Fisheries Research Institute Institutional Repository; and Openmed of National Informatics Centre India are among top 400 IRs of the world with ranks of 308, 334, 338, 380 and 384 respectively. The CASSIR, the Cross Archive Search Service for Indian Repositories harvests the metadata of 33 Indian repositories. CSIR-CENTRAL is Centralized Institutional Repositories, which hosts IRs of 11 CSIR Labs and harvests metadata of 18 other CSIR Institutional Repositories. These developments indicate that IRs are becoming popular in India. But when we take a view of Indian repositories listed in DOAR, or ROAR, we find very few university IRs and that too most of them have added negligible number of records in their IRs, even in case of prestigious universities.

The University of Mysore and its Library System:

The University of Mysore was established in the year 1916 during the benevolent reign of the Maharaja of Mysore, His Highness Nalvadi Krishnaraja Wodeyar. Sir M Visvesvarayya played a decisive role in the launch of the University. The mission of the University aims at 'promoting teaching and research in conventional and traditional domains of Arts, Humanities, Pure and Applied Sciences and Professional



disciplines'. The conglomeration of all the post-graduate studies of the University at one location, during the tenure of the Vice-Chancellorship of Dr. K.V. Puttappa is a major development. The University has 42 Postgraduate Departments at the Main Campus, Manasagangotri and 3 Postgraduate Centres at Mandya, Hassan and Chamarajanagar. The University has excellent infrastructure for supporting its curricular and co-curricular activities. The IT infrastructure with high bandwidth Internet along with WiFi connectivity in all its campuses and institutes developed in the recent years is comparable to those of IITs in the country. In the recent years the university has the distinction getting recognized as Institute of Potential Excellence with 100 crore UGC aid and University of Potential Excellence with another 50 crores aid, apart from many other recognitions from DST, DSIR, etc. The varsity underwent NAAC reaccreditation recently and got 'A' grade with CGPA rating of 3.47 putting its rank as 1st among universities in Karnataka, 4th among all state universities and 12th among all types of universities in the country.

The University Library has a collection of 6.2 lakhs covering books, reference works and journal back volumes. In addition, all constituent colleges, special institutions, PG centres and most of the departments have their own libraries. The main library houses a Digital Information Resource Centre (DIRC), Career Information Resource Centre (CIRC) and state-of-the-art Learning Resource Centre for Visually and Physically Challenged. The DIRC attracts about 600 students and research scholars everyday on an average. The computer systems available in the DIRC are being increased to about 350 from the existing 120 very soon. All e-resources subscribed through UGC INFLIBNET including >7000 commercial full text journals, 10 databases are accessible to users both through campus wide and remote access. About 20,000 e-books of commercial publishers like Springer, Wiley, T & F and CRC-Netbase have been made available on perpetual access basis. The e-resources Portal developed by library facilitates single point access for both subscribed content and thousands of journals, books, thesis, etc in open access channels. Extensive orientation programs are conducted at each of the departments and constituent colleges. The usage statistics of INFLIBNET facilitated e-resources has seen a phenomenal increase for the last 3 years. Its rank in terms of downloads, which was 46th in 2009 among all universities in the country rose drastically to 15th rank in 2012 and account for 36% of downloads by all eight universities in Karnataka.

ePrints@UoM, the Digital Repository of Research, Innovation and Scholarship:

In the formative period of University of Mysore the stress was given on research in social sciences, arts and humanities. However for the last 30 years or so, the research activities in physical and biological sciences got a big boost as indicated by number of proportionate increase in scholarly publications. While there are no records to clearly indicate the number of publications of the university from its inception, it is estimated that there could have been about 25,000 scholarly research articles published in various national and international journals. The university whose centenary year is fast approaching has seen many generations of faculty members and research scholars. A good number of faculty members who served the varsity in its formative period are not available for us to collect the literature published by them. As the days passed it would be much more difficult for the varsity to give an account of its own research which has gone in the form of scholarly publications. In view of this, it was decided to setup an

institutional repository of its research output sometime in May 2013 and the outcome is the ePrints@UoM, the Digital Repository of Research, Innovation and Scholarship of University of Mysore. The figure 1 gives the screenshot of ePrints@UoM.

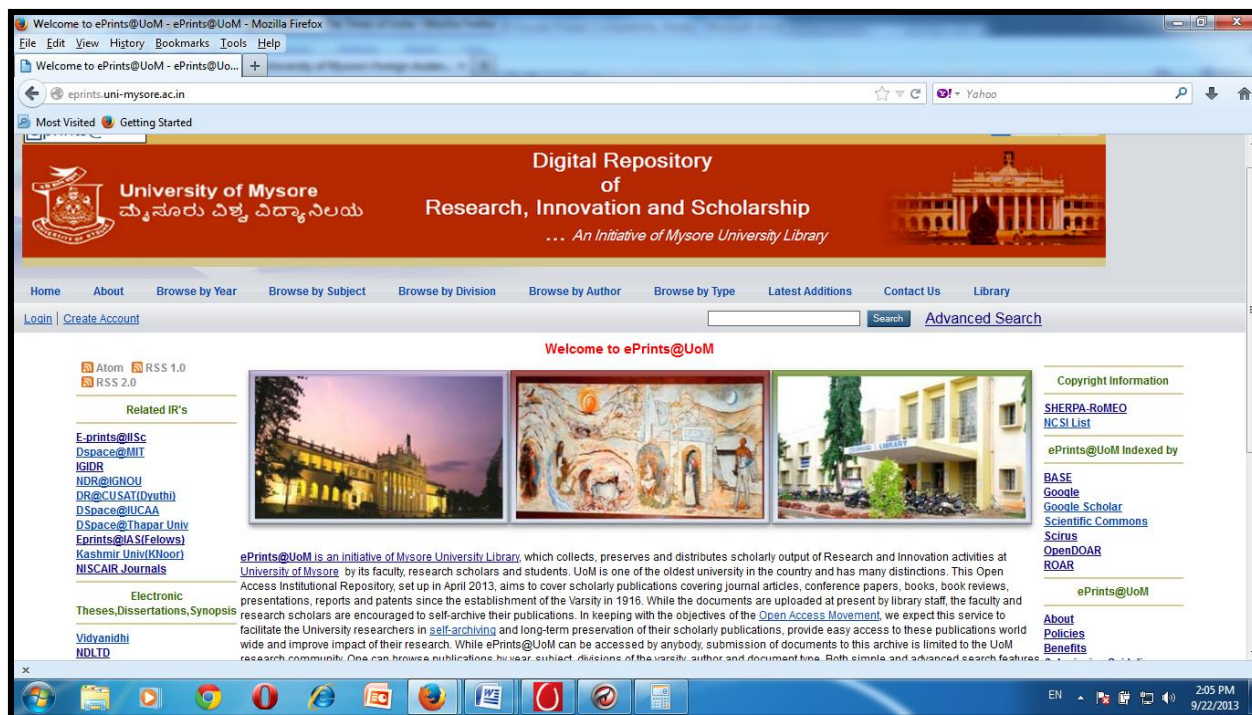


Figure 1

Objectives of ePrints@UoM

The main objective are:

- To collect the research publications of faculty of University of Mysore using authentic information sources.
- To facilitate long-term preservation of scholarly work done earlier and pursued in future..
- To facilitate UoM members of an institution an easy and rapid way to publish and archive their research locally, especially the ones not getting into main stream of the vast archives and search engines world over.
- To provide an integrated view of and act as a single entry point to scholarly work of UoM.
- To provide wider accessibility, visibility and distribution of the scholarly work of UoM.
- To act as a self-evaluation tool for the UoM management.

Facts, Figures and Features of UoM Institutional Repository:

- The ePrints@UoM is the initiative of Mysore University Library.



- This repository runs on the open source software GNU Eprints version 3.3.12 set up on Linux-Ubuntu version 11.10.
- The ETDs have been kept out of the scope of this repository, as it is planned to set up another IR of ETDs using the open source software DSpace.
- Although initiated just 5 months back, on the day of writing this paper 7658 items have been added to the repository with a break up of documents types as follows: Articles - 7386, Conference/Seminar items – 191, Book Section – 64, Books -26 and Patents – 3.
- If we take into account of records of an individual organization added to its IR, the ePrints@UoM gets the first rank among the universities of its kind in the country, next only to IRs of IISc and IIT, Mumbai.
- The oldest item added is a book “*The philosophy of Rabindranath Tagore*” by Dr. S. Radhakrishnan published in 1919. He was Professor of Philosophy at University of Mysore during 1918 to 1921.
- It is heartening to note that as many as 214 items published prior to 1960 have been added to UoM repository so far.
- Full texts for more than 90% of items have been made available.
- While ePrints@UoM can be accessed by anybody, submission of documents to this archive is limited to the UoM research community. One can browse publications by year, subject, divisions of the varsity, author and document type. Both simple and advanced search features have been given for facilitating specific searches. Interested users can freely download and use documents as most of them are directly accessible and full-texts downloadable, if the publication is in open access or if their institution has the accessibility to the concerned journal/publisher. 'Request Copy' forms can be used for documents to which direct full-text download is restricted due to publisher embargo.
- Physical Sciences with 5039 (65.89%) items account for maximum number of scholarly publications added to the repository followed by Agriculture and Biological Sciences – 1833 (23.97%), Information, Computer and Applied Sciences – 415 (5.32%), Social Sciences – 326 (4.26%), Humanities and Fine Arts – 66 (0.86%) and least is from Management Sciences -52 with (0.69%).
- The DOS in Chemistry, Manasagangotri accounts for maximum number of publications added by individual department with 2482 records (32.67%) followed by Physics with 1246 records (16.43%), Zoology with 484 records (6.37%), Botany 469 records (6.17%) and Earth Science with 442 records (5.82%). It is heartening to note that Yuvaraja’s College accounts for 332 records (4.37%) of total uploads to university IR. The Polymer Science division of PG Centre, Mandya accounts for 99 records (1.30%).

Best Practices followed for the Development of ePrints@UoM:

- *Searching and Collections of Scholarly Publications:* Considering the fact that Web of Science database facilitates field based author’s address search, we decided to export all items of



University of Mysore in BibTex file form 1986 onwards in yearly batches. These records were uploaded item by item after incorporating required corrections and full texts were added following the guidelines of SHERPA-RoMEO project. Then onwards the items were collected year wise from various sources and checked for their duplication with existing records of IR. The indexing and abstracting services and search engines searched for the scholarly output of University of Mysore include Scifinder (Chemical Abstracts), MathSciNet, J-Gate Plus, LISA, Google Scholar, Directory of Open Access Journals (DOAJ), IR Harvesters like OAISter and BASE, A good number of full texts databases of commercial publishers were also used sources for publications of UoM.. Each item was checked carefully for its authenticity especially to verify whether the author belonged to University of Mysore or not. A group Email was sent to all faculty members and research scholars to take stock of their items added in the repository with a request to send details of the missing items along with full texts. This process is still under progress. There were difficulties in identifying University publications especially from the authors of Colleges and PG Centres like Central College, Bangalore, which was a constituent college of University of Mysore before its bifurcations. A good number of items were retrieved from printed sources and were scanned for uploading full texts. Even searching by individual authors of University of Mysore is under progress to make the repository as comprehensive as possible.

- *Defining the Communities (Divisions):* All PG Departments of the University from four campuses and five Constituent Colleges and other Institutes publish scholarly papers. For the sake of convenience the following four level structure was used in defining Communities/Divisions as mentioned below:

❖ University of Mysore

➤ Constituent Colleges

▪ Yuvaraja's College Mysore

- Biochemistry
- Biotechnology

➤ -----

➤ PG Campuses

▪ Manasagangotri

- Ancient History and Archaeology
- Anthropology
- -----






▪ -----

▪ PG Center, Hassan

- Bioscience

- The subject tree was defined under six main headings viz. i. Agriculture and Biological Sciences; ii. Humanities and Fine Arts; iii. Information, Computer and Applied Sciences; iv. Management

Sciences; v. Physical Sciences; vi. Social Sciences. For interdisciplinary items credits were given to multiple subjects and the same procedure was followed for giving to the credit to the respective divisions.

- The eprints@UoM is compliant with the interoperability protocol OAI-PMH.
- A technique is used for accessing full texts of most of the records added to the repository within IP ranges of all UoM campuses.
- The ePrints@UoM has defined its own policies covering Metadata Policy; Data Policy; Content Policy; Submission Policy and Preservation Policy.
- The submission guidelines have been provided for the registered faculty members and research scholars to upload publications on their own to be approved by the IR administrator.
- Web 2.0 features including  Atom,  RSS 1.0,  RSS 2.0,  Facebook, and  Twitter have been enabled for getting the feedback and suggestions for missing items.
- Recently the repository has been submitted to various harvesters like BASE and OAIster and IR directories like OpenDOAR and ROAR enabling them to cover the data from ePrints@UoM.
- Appropriate links have been given for useful sites both from the point of view of directing the users to related IRs & harvesters and SHERPA-RoMEO site for knowing the issues related to copyrights provided by the various journal publishers for facilitating different levels of access to the full texts.

Future Plans:

- Setting up of a repository of ETDs submitted to UoM using the OSS DSpace.
- Setting up a repository of popular articles by varsity staff in various magazines.
- Setting up of a separate repository of publications published by university Prasaraaranga with full texts of those not being possible to reprint and in case of other books to cover only Front Matter and few select pages to give visibility to books concerned.
- Setting up of a repository of heterogeneous type of documents like question papers, convocation addresses, flora and fauna, news clippings, etc.
- Adding the in-house course materials to existing EPrints@UoM.
- Adding scholarly publications of the varsity published in other languages like Kannada, Hindi, Urdu, Sanskrit, etc.
- Add many more new features to ePrints@UoM and popularizing it both inside and outside the varsity.

Conclusion

Open access institutional repositories play major role in preserving and disseminating research output of the institute resulting in better visibility for its publications and thereby increasing the citations. Mysore University Library took the initiative of setting up of ePrints@UoM, a Digital Repository of Research,



Innovation and Scholarship. Although initiated very recently the repository has already uploaded more than 7600 records, which is highest among the universities of its kind in the country. A number of best practices were adopted especially in searching and identifying the university publications as the university had many more institutions under its control before the its bifurcation. Usually faculty and research scholars from Social Sciences and Arts & Humanities publish in less known or local journals and produce more conference papers compared to science. As a result of this the repository staff had difficulty in culling out the publications of these disciplines. The ePrints@UoM is being the newly set up repository there is lot of scope to improve it both qualitatively and quantitatively. The project staff plans to approach both serving and retired faculty members for their publications to make the repository as comprehensive as possible.

Acknowledgements: The authors acknowledge the guidance and help of Dr. C.P. Ramasesh, the University Librarian for setting up of the IR. The main credit for the successful implementation of ePrints@UoM goes to all Library Project Assistants and staff for searching and uploading the records to the repository.

References:

1. Anuradha, K.T. (2005). Design and development of institutional repositories: A case study, *The International Information & Library Review* 37, 169–178.
2. Consejo Superior de Investigaciones Científicas (CSIC), Spain. Available at: <http://repositories.webometrics.info/>.
3. ePrints@UoM, University of Mysore. Available at: <http://eprints.uni-mysore.ac.in/> dated 19/09/2013.
4. Lynch, Clifford. "Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age." *ARL Bimonthly Report*, No. 226, February 2003. <<http://www.arl.org/newsltr/226/ir.html>>.
5. Poornima, Narayana and Biradar, BS and Goudar, IRN (2006) *Institutional Repositories in India: A Case Study of National Aerospace Laboratories*. In: *Digital Libraries: Achievements, Challenges and Opportunities*. Lecture Notes in Computer Science, 4312. Springer-Verlag, Berlin, pp. 533-544.
6. University of Mysore. Available at: <http://uni-mysore.ac.in/> dated 20/09/2013.