Institutional Repositories Movement in India: Tips & Strategies for Success in the Challenging Times

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The paper highlights the institutional repositories (IRs) movement in India updated till Nov 2009. The paper attempts to identify and evaluate institutional repositories in India with special reference to initiatives taken by twelve DRDO laboratories/establishments including DESIDOC. This paper gives a comprehensive listing of workshops conducted in India to promote development of IRs and also lists institutional repositories developed in India, most of which are available in the public domain. The IRs are identified through a study of the literature, as well as internet searching and browsing. A questionnaire based survey followed by select telephonic interviews were conducted to examine the number of DRDO labs/estts, who have already hosted IRs, and those who intend to do so in the near future. Use of open source software, especially DSpace, is found to be most commonly used for the creation of IRs in India. The collection size in most of the IRs of India is in few hundred records only. IRs face a seemingly endless set of interrelated challenges. Most pertinent questions are: How can we attract content? And how can we integrate IRs into the Institutions landscape?

The paper highlights the Indian initiatives in the field of IRs. It provides an overview of the 69 institutional repositories of Indian institutions in a range of subject disciplines. This article highlights software requirements for setting up IRs and the current trends in India. The paper conducts a literature review and questionnaire survey on IRs already established and those planned in near future among DRDO Labs/Estt and to incorporate it with the authors' own experiences. The authors believe that institutional repositories will help in the sharing of institutional intellectual output and will increase article citations and the impact factors of Indian publications. The LIS professionals should play a proactive role in the growth of e-resources in institutional repositories to enable IRs to become sustainable in the future also. This paper explores some of the challenges and benefits to libraries operating an IR. Lastly, this paper will examine the future of IR's as it relates to issues in sustainability and viability for institutional repositories.

Keywords: Gyansrota, India, Institutional Repositories, IR software, Open Access Archives, Open Access Literature, Open Publishing.

1.   Introduction

Clifford Lynch (2003), Executive Director, Coalition for Networked Information, stated "An institutional repository is a set of services offered by a university to manage and make accessible scholarly digital materials created by the institution and its community members".

According to Heery & Anderson (2005) Institutional repositories:

- ⮑ Contains content, deposited by owner, creator, or third party;
- ⮑ Repository architecture manages content as well as metadata;
- ⮑ Repository offers a minimum set of basic services, e.g. put, get, search, access control;
- ⮑ Repository must be sustainable and trusted, well-supported and well-managed;
- ⮑ If an Open Access repository, it must also:
    - ♦ Provide open access to its content (notwithstanding legal constraints);
    - ♦ Provide open access to its metadata for harvesting.

According to ROAR (as on 1st Nov 2009), there are 49 registered repositories (Figure-1) in India (out of total registration of 1515) whereas OpenDOAR lists only 36 registered repositories in India (out of total registration of 1513). At present there are over 69 IRs in India (Appendix-B) of which 53 are hosted on public domain (Internet) and balance 14 on Intranet/LAN. The leading IRs are developed by IISc, ISI, NAL, NCL, NIO, RRI, DU, IITs, DRDO, etc. The Indian Institute of Science, Bangalore, was the first to set up an institutional repository in India. It uses e-prints archiving software. It can be accessed by anybody but submission of documents to this repository is limited to the IISc research community. It has approximately 15,391 e-prints in its archive (as of 1st Nov 2009).
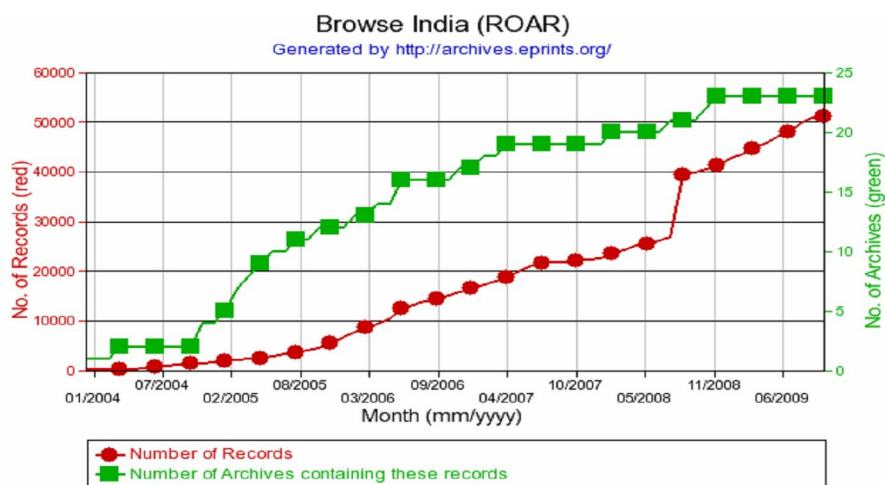

Figure-1: Growth of Indian IR as per ROAR

An institutional repository content (Figure-2) may include full-text contents of journal articles, conference papers, book chapters, monographs, research reports, project reports, theses, dissertations, patents, presentations, computer programs, tutorials, convocation addresses, audio materials, video materials, course materials, multimedia materials, handbooks, data books, technical manuals, beside many others types of documents. Institutional repositories have capability to build up collections for different user's categories and incorporate different forms of documents in different formats.
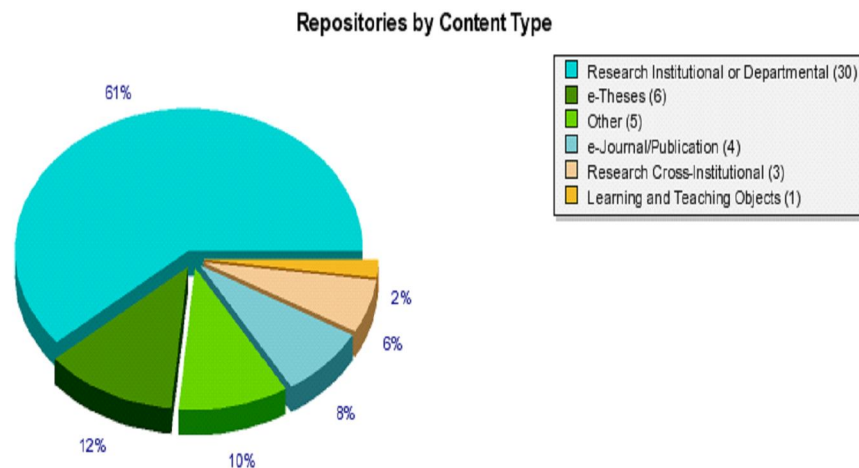
Repositories by Content Type

Legend:
- Research Institutional or Departmental (30)
- e-Theses (6)
- Other (5)
- e-Journal/Publication (4)
- Research Cross-Institutional (3)
- Learning and Teaching Objects (1)

Figure-2: Content type in Indian IRs as per ROAR

Some of the open source software's widely used for the development of an IR are:

- DSpace (Digital Space), http://www.dspace.org
- Eprint Archive, http://cdsware.cern.ch/www.eprints.org
- FEDORA: An Open Source Digital Repository Management http://www.fedora.info/
- FirstSearch (OCLC), http://firstsearch.oclc.org/
- GSDL (Green Stone Digital Library), http://greenstone.unam.na/gsdl/cgi-bin/library
- In-house/local (Many)

There is an overall commitment to using open source software for setting up archives, although proprietary software is generally used for word-processing and presentations. Use of open source software especially DSpace is found to be most commonly used for the creation of IRs in India. IR of IIT Mumbai is moving from its present Greenstone software to DSpace.

2.   Scope and Methodology

The Indian IRs were identified through a study of the literatures and with the help of internet searching and browsing. A questionnaire survey was made to examine the number of DRDO labs/estts, who have already hosted IR, and those who intend to do so in near future. This paper draws on the results of interviews conducted in the later half of 2009 with DRDO librarians and information professionals involved in the installation and management of IRs. It provides a snapshot of current activity and future plans for growth of these repositories. Telephonic interviews conducted were semi-structured and participants were asked to comment on their subject expertise and training, choice of software, resources

such as staffing, infrastructure and sources of funding, repository policies, promotion and advertising, user feedback, institutional support and future plans. Where person-to-person interviews were not possible, answers to open-ended questions were provided by participants via telephone and e-mail.

3   IR Initiatives by DRDO

3.1   ADE, Bangalore

The Aeronautical Development Establishment (ADE) is a laboratory of India's Defence Research and Development Organisation (DRDO). Located in Bangalore, its primary function is research and development in the field of military aviation. Its recent successful projects include Lakshya (an aerial target), Nishant (a reconnaissance UAV), flight simulators (LCA, Ajit, Kiran, MIG-21) and avionics packages for Tejas-LCA. It earlier worked on Sparrow (mini-UAV) and Ulka (aerial target).

Its IR is branded as ADE digital repository. Its IR is hosted on intranet & uses Eprints software. Its IR covers presentations by scientists, research papers, etc type of materials. Total records in its IR are 267.

3.2   ARDE, Pune

Established in 1958, Armament Research & Development Establishment (ARDE) is entrusted to achieve the cherished goal of self-sufficiency in the vital field of Armaments. In 1966, ARDE moved to its present location at Pashan on the out-skirts of Pune City.

Its IR is available on intranet as Digital library@ARDE. It uses DSpace as software support for its IR. The contents of IR are that standards and patents (34,000) and e-books & research papers (5180). Total records in its IR are 40718.

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3.3   CVRDE, Chennai

Combat Vehicles Research & Development Establishment (CVRDE) is known for manufacturing Vijayanta and Arjun Tanks, at Avadi, Chennai. It uses GSDL 2.5 software for its IR. The best part of IR at CVRDE is that it has a lot of technical photographs of products and services of CVRDE. Total collection in its IR is 217.

3.4 DFRL, Mysore

The Defence Food Research Laboratory (DFRL) came into being on 28th December 1961 under the aegis of Defence Research and Development Organization (DRDO), Ministry of Defence, Government of India, at Mysore especially to cater to the varied food challenges of Indian Army, Navy, Airforce and other paramilitary forces. The R & D efforts at DFRL are aimed at designing and engineering lightweight, convenience pack rations for Army, Navy, Air Force and other paramilitary forces. These pack rations do not require any elaborate cooking or preparation at the consumer's end and remain shelf-stable under

varying climatic conditions for periods ranging from 6 months to 1 year when packed properly. It is using Dspace for hosting its IR and having total records in its IR are 13786.

3.5 DIAT, Pune

The Defence Institute of Armament Technology as it is known today came into being as the Institute of Armament Studies in 1952. In 1967, the Institute moved to its present location at Girinagar, Pune. On the basis of accreditation by the All India Council of Technical Education (AICTE), Pune University recognised eight courses for the award of ME degree in 1980. In the year 2000, the Institute acquired the status of a Deemed University, and is popularly known as Defence Institute of Advanced Technology (DIAT). IR at DIAT has annual reports, in-house documents, dissertation & theses, finance documents, question papers of various courses held and research & technical papers. Total number of records in IR at DIAT is 280.

3.6 GTRE, Bangalore

Gas Turbine Research Establishment (GTRE) is a laboratory of he Defence Research and Development Organisation (DRDO). Located in Bangalore, its primary function is research and development of aero gas-turbines for military aircraft. As a spin-off effect, GTRE has been developing marine gas-turbines also.

Its IR is available at Digital library@TICL. It uses DSpace as software support for its IR. The highlight of this IR is that a lot of power point presentations are also loaded on this. Total records in its IR are 189.

3.7 LRDE, Bangalore

Electronics and Radar Development Establishment (LRDE) has its genesis in the Inspectorate of Scientific Stores created in 1939 at Rawalpindi which was redesignated as Technical Development Establishment (Instruments and Electronics) in 1946 and located at Dehradun. The establishment was renamed in 1962 as LRDE and dedicated to the design and development of Radar and Communication equipment. Its present location is at CV Raman Nagar, Bangalore.

Its IR is branded as LRDE digital repository. It uses DSpace software. At LRDE the users/authors are not given permission to directly upload the data on IR. However LRDE regularly conducts IR awareness programmes for its users. Total records in this IR are 1943.

3.8 MTRDC, Bangalore

Microwave Tube Research & Development Centre (MTRDC) is a constituent R&D laboratory of Defence Research & Development Organisation, Ministry of Defence. It was established in 1984, with an aim to develop advanced types of microwave tubes to meet the present and futuristic needs of the country and establish self-reliance in this strategic area.

Its IR is branded as MTRDC publication archives. It uses Greenstone digital library software. The authors/ users are neither given training to directly upload data to its IR nor are allowed to do so directly. Total records in its IR are 106.

3.9   NPOL, Kochi

The origin of the naval system technology in India can be traced to the establishment of the laboratory called Indian Naval Physical Laboratory (INPL) by Indian Navy in 1952 at Cochin in Kerala. Subsequently, INPL was rechristened as Naval Physical Oceanographic Laboratory (NPOL) which functioned from within the Naval Base in Kochi. In the year 1990, NPOL moved into the sylvan surroundings at Thrikkakkara, a suburb of Kochi. NPOL has an offsite setup of underwater acoustic research facility at Idukki Lake, 100 km east of Kochi. NPOL also owns, since 1995, INS Sagardwani a 2000 ton Oceanographic research vessel used for oceanographic data collection.

The digital library DSpace@npol was put in place by the Technical Information Resource Centre (TIRC) of NPOL that customised DSpace to suit the requirements of the scientific community. Initially, the lab had used Greenstone, open-source software (The Hindu, 11Oct, 2008).

The lab has been able to digitise close to 2,000 reports, including annual reports, research reports and scientific papers besides conference proceedings, in-house publications, student's project reports, technical journals and course material. The library, made accessible from all computer terminals in the lab through Intranet, is considered to be our institutional repository, a move towards conjuring up a knowledge management apparatus. The total number of records available in its IR is 2000.

Functions such as developing collections, organisation, submission, review, access and retrieval are managed at distributed locations over the network. Users register as members and subscribe to entire collections or sub-collections depending on need. Mail alerts are sent out to members of each collection whenever a new document is added to the subscribed collection. There are various ways of access permissions that can be given to items in the collection. As a result, classified information is only made visible to authorised viewers.

3.10   R&DE (E), Pune

Research & Development Establishment (Engineers), Pune traces its origin to the Inspectorate of Engineer Stores set up at Kolkata during World War II for exercising quality control on stores of indigenous origin and to provide guidance to manufacturers producing items used by the Services. With the expansion of activities of DRDO, need for a separate establishment for design and development of equipment for the Corps of Engineers was felt and R&DE (Engrs) was established at Dighi in Pune on 09 Feb 1962. The Establishment's primary role was the development of mobility and counter mobility equipment for the Corps of Engineers. The lab has provided self sufficiency in indigenous development of Combat Engineering Equipment.

Its IR has hosted a lot of standards for day to day use for scientists & staff of R&DE (E). Unfortunately at this lab the authors/users are neither given training to directly upload data to its IR nor are allowed to do so.

3.11   SASE, Manali

Snow and Avalanche Study Establishment (SASE) was set up in 1969 near Manali to combat the hazards of snow and avalanches not only to help the Armed Forces to fight and live in the mountains but also to accelerate the pace of socio-economic growth of the inaccessible snowbound hill regions. SASE was initially assigned the task of studying snow and avalanche problems along certain mountain highways in snowbound belt of Indian Himalayas. Today SASE's Research and Development Centre (RDC) is also functioning from HIM PARISAR, Sector 37-A, Chandigarh.

Its IR is branded as HIMGYANSROTA. It has over 600 records but unfortunately authors are not permitted to upload their data to IR. Himgyansrota also does not grant permission to authors/users to upload data in the IR.

3.12   Gyansrota (DRDO Institutional Repository) by DESIDOC

Defence Scientific Information and Documentation Centre (DESIDOC) is an establishment of Defence Research and Development Organization (DRDO), Ministry of Defence. DESIDOC became a self-accounting unit and one of the laboratories of DRDO on 29 July 1970.

Since it became a self-accounting unit, DESIDOC has been functioning with the aim to be a centre of excellence in disseminating scientific and technical information on cutting edge technologies for defence research and development. It provides S&T information, based on its library and other information resources, to the DRDO headquarters, and its various laboratories located at across India. DESIDOC is primary information resources centre for providing information, library, reprographic, and translation services. It also provides continuing education and training to the DRDO library and information science community.

DESIDOC is a nodal agency for collecting and preserving of intellectual output of DRDO scientific heritage. It has created an IR of DRDO intellectual contents using DSpace open source software. Defence Scientific Information and Documentation Centre (DESIDOC), Delhi, has launched one of its most ambitious projects by hosting the DRDO Institutional Repository on DRDO Intranet (DRONA) (7). The institutional repository named Gyansrota is a digital archive of the knowledge capital created to by the scientific community of DRDO which is accessible to end users in the organisation. The service can be accessed through the 'single window to services' webpage of DESIDOC by clicking on to the DRDO IR

button. The repository aims to centralise, capture, store, preserve, and provide access mechanism of the research output, i.e., intellectual content of DRDO. This includes research papers and articles, technical reports, adhoc publications, learning material, images, patents, book chapters, biographical sketches, etc. Initially the repository is hosted on Intranet and later on it will be hosted on to Internet also.

The advantages of Gyansrota a repository are multifold like:
- ➲ Serving as a tangible indicator of the institution's quality and demonstrates the scientific, societal, and economic relevance of its research activities, thus increasing the institution's visibility, status, and public value
- ➲ Long-term preservation of the research output of DRDO
- ➲ Providing wider, faster, and simultaneous/multiple access within the DRDO community
- ➲ Sharing and reusing of knowledge asset of the organization
- ➲ An Increase in citations to one's research because of the open access on Internet

Gyansrota is organised into a hierarchical set of communities, sub-communities, and collections:

- ➲ Communities: Form the top layer: i.e., DRDO HQrs (91 records), DRDO Image Gallery (22 records), DRDO laboratories (2712 records), DRDO women (346 records), etc.
- ➲ Sub-communities: A division of the community i.e., Directorates, etc.
- ➲ Collections: Each sub-community can contain various collections. These are groups of documents related by content type, i.e., research articles, learning material, patents, etc.

The repository contains bibliographic metadata and the full-text of every document. Users can search across metadata, as-well-as the full-text of the documents, either at particular level or across the whole repository. Content can be browsed in a number of ways via communities/collections, titles, authors, dates and subject keywords. Thus navigation across the repository is user-friendly and presentation is in a lucid manner.

DRDO is a huge multi-laboratory organisation with diverse R&D activities. The intellectual output of the organisation in terms of volume would be enormous. Thus, the IR has to be populated in a phased manner with contributions at all levels, right from the author, the management, the information person-nel (TIC/TIRC), and the repository team. Being an author is a matter of pride as it involves knowledge generation. Knowledge needs to be propagated to spread awareness and increase its value. To make one's contribution to research available in the repository, one can submit a soft copy of the same to its TIRC head/library in-charge with all bibliographical details which will then be forwarded to the reposi-tory team at DESIDOC for inclusion in the IR.

DESIDOC has recently hosted beta-version of DRDO IR on Internet. Currently it contains 2712 full text articles published by DRDO scientists and biographies of eminent scientists of DRDO.

4   **Reasons for contributing to IR**

➲ Helps to boost image within institute

➲ Helps to boost external recognition

➲ Facilitates subject content to be known to outside world

➲ It is compulsory in an institution

➲ Results in financial benefit/ promotion

➲ Helps in making useful contacts outside

➲ Opens up possibility of doing pedagogical research in subject area

5   **Reasons for not contributing to IR**

➲ IR is a recent development and user/author is not aware of its existence

➲ Like to keep my material on my website

➲ Do not have time to contribute my material to IR

➲ Do not know How and what to contribute?

➲ Do not want anyone else to use my materials

➲ Like to want my materials to be used by certain group only

➲ Wish to have control on my intellectual property

6   **Most Common Challenges & Constraints in India**

The problems and hurdles which implementation teams face in building a repository (7) include the following:

➲ Nature of content: Classified/restricted and Unclassified/Open

➲ Lack of awareness

➲ Ignorance of users in the absence of appropriate promotion program

➲ Poor bandwidth

➲ Inadequacy of generation of digital resources (Slow digital preservation)

➲ Poor adoption rate by academics

➲ Non-availability of telecommunications infrastructure

➲ Difficult to have control over the quality of the content to digitise

➲ Absence of a well defined contents related institutional policy

➲ Lack of IR expertise

➲ Insufficient funds for IT Infrastructure and manpower

➲ Apathy of authors towards time consuming procedure.

➲ Difficulties in managing intellectual property rights

➲ Problems related to customization of open source software is a bottle neck

7   **Training and User Support for IRs**

Library staff needs training about:

➲ Software Installation & customization

➲ General procedures, understanding the service goals, etc.

➲ User interface, adding content

➲ Metadata procedures

➲ Search methods

Users/authors need training about:

➲ General procedures, understanding the service goals, etc.

➲ User interface, adding content

➲ Metadata creation

8 Best Practices for Promoting IRs

In order to promote the IRs in India one should (Fernandez, 2006):

➲ Get support from the top management

➲ Show value of IR to authors

➲ Provide IR access statistics to stake holders

➲ Create public opinion for mandating deposits

➲ Increase awareness and training through follow-up workshops

➲ Providing online support via listserv

➲ Brand IR efforts under a logo

➲ By advertising its services on its website and in the print

➲ Make IR launch a high profile event

➲ Develop FAQs and online power point presentations

➲ Provide better visibility by registering IR with ROAR and OpenDOAR

➲ Finally be proactive in publicizing repository developments via institutional newsletters & bulletins, seminars& workshops and email alerts etc

9. What does success mean for an IR?

Indicators of success for an institutional repository include the following (Fernandez, 2006):

9.1 Submissions

➲ Number of submissions – a high number of submissions (i.e. digital content that is contributed to the institutional repository by its creator or producer)

➲ Frequency of submissions – the occurrence of submissions is continuous over time and/or there are increasing submissions from recurring producers

➲ Type of submitter – broad representation of constituents (e.g. this might mean that faculty at all levels – staff, graduate students and undergraduate students – in most or all departments submit content)

➲ Participation of key stakeholders – for example, submissions by senior faculty or documentable support from institutional or other funders of the institutional repository

9.2 Use

➲ Number of users – many users of the institutional repository, both new and recurring

➲ Type of content used – use of the majority of the content in the institutional repository rather than use of only a small portion

➲ Nature of use – content in the institutional repository is routinely cited in reports and publications

9.3 Support

➲ Constituent support – depositors and users express satisfaction with the institutional repository.

➲ Financial support – the institution provides ongoing, and preferably increasing, support.

➲ Technical support – there is adequate support and interest in the development and enhancement of the infrastructure, software and tools required by the institutional repository.

The above are just some of the possible metrics for success that might be considered. To demonstrate success, an organization that manages an institutional repository would have to either promote or document a perception within the institution that an institutional repository is successful or establish a means to define and measure the success of an institutional repository.

10. Conclusion

Promotion of open access and IR in India has been largely due to the efforts of Leslie Chan, Barbara Kirsop, Subbiah Arunachalam and the late T.B. Rajasekhar and Organizations/Universities regularly organizing workshops to trend LIS professionals to set up IRs. This paper highlights the Indian initiatives in the field of institutional repositories. It provides an overview of the 69 registered archives of Indian institutions in a range of subject disciplines. The authors believe that institutional repositories will help in the sharing of institutional intellectual output and will increase article citations and the impact factors of Indian journals.

Institutional Repositories (IRs) offer the opportunity for libraries to collect and preserve and disseminate the institutions scholarly output. Serving an important service to the community, institutional repositories offer many benefits to the institutions community as well as other people and communities around the world. Institutional repositories make it possible to collect content in one location, capture and provide

open access to the intellectual output of a university, as well as preserve content that may be otherwise unavailable or out of publication. It is essential to explore the benefits as well as the challenges of institutional repositories to make sure it is worthwhile to the library as well as the institution.

Low self-archiving rates have dampened hopes that IRs would have an impact on scholarly publishing models. Preservation programs, a stated goal of many IRs, are often not well established. In many cases, IRs is not part of a larger vision for services the library can provide to the institution, but are isolated projects without a strong base of support.

As DRDO the major initiatives in the area of establishment of IR are taken by ADE, GTRE, LRDE and MTRDC at Bangalore, ARDE, DIAT and R&DE (E) at Pune, CVRDE, Chennai, DFRL, Mysore, NPOL, Kochi, SASE, Manali and the mother of all DRDO Institutional Repository– Gyansrota by DESIDOC, Delhi. Since DRDO deals with sensitive subject area of defence, nearly all the IRs of DRDO labs/estts are on Intranet, which is accessible only to DRDO employees. Other 11 DRDO labs/estts are planning to establish IR in the near future.

Appendix

Table 2: List of IRs in India (as on 1st Nov 2009)

SN	Host Organisation/ University	Web Address	No. of Records
1.	ADE (DRDO) Bangalore	Hosted on Intranet	267 approx.
2.	ARDE, DRDO	Hosted on Intranet	40718
3.	Bangalore Management Academy	http://bma.ac.in:8080/DSpace/	685
4.	Bethesda CAM Research Center, Tirunelveli, Tamilnadu	http://www.siddhapapers.org/	25 approx
5.	Bharathidasan University Library, Trichy	http://172.16.1.10:8084/DSpace/	NA
6.	Bioinformation	http://www.bioinformation.net/	320 approx.
7.	Central Drug Research Institute,	http://dkr.cdri.res.in:8080/DSpace	135
8.	Central Institute of Medicinal & Aromatic Plants, Lucknow	http://kr.cimap.res.in/index.jsp	121
9.	Cochin University	http://dyuthi.cusat.ac.in/DSpace/	1912
10.	CVRDE (DRDO) Chennai	Hosted on Intranet	217 approx.
11.	Delhi College of Engineering Repository	http://202.141.12.109/DSpace	326
12.	Delhi University	http://EPrints.du.ac.in/	178
13.	DESIDOC, Gyansrota– The DRDO Institutional Repository	http://ir.drdo.gov.in:8080/dspace/	1766

14.	DFRL, (DRDO) Mysore	Hosted on Intranet	13786
15.	DIAT, DRDO	Hosted on Intranet	280
16.	DRTC, Bangalore	http://drtc.isibang.ac.in/	567
17.	GB Pant University of Agriculture & Science, Pantnagar	http://202.141.116.205/DSpace/	82
18.	GTRE (DRDO) Bangalore	Hosted on Intranet	189 approx
19.	Guru Gobind Singh Indraprastha University, Delhi	http://DSpace.ipu.ernet.in:8080/dpace	NA
20.	ICFAI Business School (IBS), Hyderabad	http://202.131.96.59:8080/DSpace	213
21.	IGNOU, New Delhi	http://www.egyankosh.ac.in/	18568
22.	IIT Delhi	http://eprint.iitd.ac.in/DSpace/	2143
23.	IIT Kanpur	http://cse.iitk.ac.in/cgi-bin/library	797
24.	IIT Mumbai	http://dspace.library.iitb.ac.in/jspui/	1525
25.	Indian Institute of Management Kozhikode (IIMK)	http://EPrints.iimk.ac.in/	571
26.	Indian Institute of Science, Bangalore (Electronic Theses and Dissertations)	http://etd.ncsi.iisc.ernet.in/	483
27.	Indian Institute of Science, Bangalore, India	http://EPrints.iisc.ernet.in/	15391
28.	Indian Institute of Astrophysics, Bangalore	http://prints.iiap.res.in/	4544
29.	Indian Institute of Information Technology, Allahabad	http://EPrints.iiita.ac.in/	22
30.	Indian Institute of Management, Kozhikode	http://DSpace.iimk.ac.in/	488
31.	Indian National Science Academy, New Delhi	http://61.16.154.195/dsapce/	818
32.	Indian Statistical Institute (ISI), Library, Bangalore	http://library.isibang.ac.in:8080/DSpace	191
33.	Indira Gandhi Institute of Development Research, Mumbai	http://oii.igidr.ac.in:8888/DSpace	193
34.	INFLIBNET, Ahmedabad	http://DSpace.inflibnet.ac.in/	505
35.	Institute of Mathematical Sciences, Chennai	http://www.imsc.res.in/EPrints/	38
36.	Institute of Minerals and Materials Technology, Bhubaneswar	http://EPrints.immt.res.in/	13
37.	Institutional repository at MDI, Management Development Institute, Gurgaon	http://DSpace.mdi.ac.in/DSpace	335
38.	Institutional repository at MDI, Management Development Institute, Gurgaon	http://DSpace.mdi.ac.in/DSpace/	335
39.	International Crops Research Institute for the Semi Arid Tropics (ICRISAT), Patancheru	http://openaccess.icrisat.org/	2000 approx
40.	JIIT, Noida	http://172.16.72.88/DSpace/	516

41.	LRDE (DRDO) Bangalore	Hosted on Intranet	1943
42.	Madurai Kamraj University	http://EPrints.bicmku.ac.in/	71
43.	Mahatma Gandhi University, Kottayam, Kerala	http://www.mgutheses.org/	913
44.	MedknowEPrints, Mumbai	http://EPrints.medknow.com/	39187
45.	MTRDC (DRDO) Bangalore	Hosted on Intranet	106 approx.
46.	National Aerospace Laboratory, Bangalore	http://nal–ir.nal.res.in/	3022
47.	National Center for Antarctic Research , Goa , India	http://DSpace.ncaor.org:8080/DSpace	532
48.	National Centre for Catalysis Research, IIT, Chennai	http://www.EPrints.iitm.ac.in/ http://203.199.213.48/	1315
49.	National Centre for Radio Astrophysics, Goa (NCRA)	http://ncralib1.ncra.tifr.res.in:8080/jspui/ handle/2301/1	370
50.	National Chemical Laboratory, Pune	http://DSpace.ncl.res.in/DSpace	357
51.	National Institute of Immunology (NII), New Delhi	http://EPrints.nii.res.in/	10
52.	National Institute of Oceanography, India	http://drs.nio.org/drs/index.jsp	3340
53.	National Institute of Technology, Rourkela, India	http://DSpace.nitrkl.ac.in/DSpace	869
54.	NIC, New Delhi	http://openmed.nic.in/	2458
55.	NISCAIR Online Periodicals Repository (NOPR), New Delhi	http://nopr.niscair.res.in/	4244
56.	NIT, Rourkela	http://ethesis.nitrkl.ac.in	483
57.	NPOL (DRDO) Kochi	Hosted on Intranet	2000 apprx
58.	OneWorld South Asia (OWSA), New Delhi	http://open.ekduniya.net/	116
59.	Pandit Deendayal Petroleum University, Gandhinagar	http://203.77.192.116:8080/DSpace/	01
60.	R&DE (E) (DRDO) Pune	Hosted on Intranet	100 approx.
61.	Rajiv Gandhi Center For Biotechnology, Trivandrum	http://www.rgcb.res.in	NA
62.	Raman Research Institute Digital Repository, Bangalore	http://DSpace.rri.res.in/	3786
63.	Sardar Vallabh bhai National Institute of Technology, Surat	http://EPrints.svnit.ac.in	14
64.	SASE (DRDO) Manali	Hosted on Intranet	600 approx.

65.	Sri Venkateswara University, Tripathi	http://202.141.117.109:8080/DSpace	1086
66.	Thapar University, Patiala	http://DSpace.thapar.edu:8080/DSpace/	382
67.	University of Hyderabad	http://didib.uohyd.ernet.in/ DSpacehttp://DSpace.vidyanidhi.org.in: 8080/DSpace/handle/2009/139	396
68.	University of Kashmir, Allama Iqbal Library Digital Collection	http://www.kashmiruniversity.net/ http://203.129.216.166/gsdl/cgi-bin/library.exe	450
69.	University of Mysore	http://DSpace.vidyanidhi.org.in:8080/DSpace/	54778

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