Federating Indian Institutional Repositories through National Digital Library: An Overview

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Abstract

This is an overview of the development of National Digital Library by the Government of India. It traces brief history of Institutional Repositories in India and discuss the various sources and access, browse and search strategy which includes the simple and advanced search and the display of the results. This is a long term projects, initially with 100 institutional repositories have been taken and implemented.

Keywords

Digital Library; National Digital Library; E-Books; E-Journals: Audio; Video

Electronic access

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Introduction

Digital services are made available to citizens electronically by improving online infrastructure and by increasing Internet connectivity or by making the country digitally empowered in the field of technology. Similarly, an institutional repository (IR), an online archive for collecting, preserving, and disseminating the digital copies of the intellectual output of an institution, particularly a research institution. Specifically, it requires Broadband Highways; Universal access to Internet; Public Internet Access Programme; e-Governance, Electronic delivery of services and Information for All. This facilitates the establishment of national digital library in the Global environment.

International Perspective

National digital library process in America has been initiated in late 20th century. The then US President Clinton[1] proposed and allocated a substantial fund for their first National Digital Library for Education purpose. In continuation, there are Internet Goal, National Digital Library and National Archives Preservation Project and so on during his period.

China[2], immediately after the announcement of America, has launched digital library project for their Chinese-language information to the international information community. In April 2009, the World Digital Library opened its digital portal (www.wdl.org)[3]. The library makes "available on the Internet, free of charge and in multilingual format, significant primary materials from countries and cultures around the world. The World Digital Library (WDL), an International digital library operated by UNESCO and the United States Library of Congress, promotes the international and intercultural understanding, expand the volume and variety of cultural contents and to provide resources for educators, scholars and general audiences through web.

National Digital Library of Finland completed an extensive Enterprises Architecture in March 2010[4]. The project was subdivided into four areas such as Business Architecture, Data Architecture, Application Architecture and Technical Architecture. The linking data, search services, long term access and preservation were also taken care for supporting the system.

Indian Perspective

In India, the digital library has been developed since computerization started early 1990s and after 2000 it gained momentum. National Digital Library (NDL) of India covers 40 types of learning sources and 70 plus Indian Languages, comprising from primary school level to research level collection over 13,00,000 items. There exist number of digital libraries projects exist in India, but NDL is an effort to bring all in one umbrella.

The Human Resource Development (HRD) Ministry, towards building a national asset, under the National Mission on Education through Information and Communication Technology (NMEICT), has entrusted IIT Kharagpur to host, coordinate and set up NDL. The prototype National Digital Library was launched on 3rd February 2016 at IIT Kharagpur. NDL will harvest metadata and contents from all the Institutional Digital Repositories (IDR) and other digital library initiatives and NMEICT projects in the National Digital Library Server so that the e-contents can be searched and accessed in the full text by the users through a single window. This is three phase project operated from April 2015 to March 2018 by the Ministry of Human Resource and Development.

It is a single window search facility with a facility of getting results from all the digital resources in India. Information can be customized based on the education level, choice of language, difficulty level, media of content and such other factors has been included in the NDL which may not have been included in other Digital libraries. This is thus like a 'customised service' provided in a 24x7 integrated environment where learners can find out the right resource with least effort and with in minimum optimum time.

National Digital Library of India

Initiatives have been taken by different Ministries / Departments/ organizations for digitizing and preserving data available in physical form. Department of Electronics and Information Technology (DeitY) has in the past, supported projects in the area of Digital Library Initiatives. There are two types of initiatives:

- Setting up of Mega Centers and Scanning Centres in coordination with Indian Institute of Science, Bangalore.
- Digitization with the full financial support from Department of Electronics and Information Technology.

The digital data generated by these scanning centers under this activity is web enabled on "Digital Library of India" web site http://www.dli.ernet.in[5] . A mirror site www.dli.gov.in of this data has been also developed.

Digital Library of India project started in early 2000 with the aim of digitizing freely accessible rare books collected from various libraries in India As of 2016, DLI had scanned 550,603 titles. There is another initiative taken in the direction for Theses and Dissertations by the INFLIBNET centre to have

The Vidyanidhi project (Urs & Raghavan, 2001)[6] based at the University of Mysore and sponsored by India's National Information System for Science and Technology (NISSAT) is a national effort to create, maintain, and provide network access to a digital library of Indian theses. The national level repository for theses and dissertation projected initiated. The UGC Notification (Minimum Standards & Procedure for Award of M.Phil./Ph.D Degree, Regulation, 2009)[7] dated 1st June 2009 mandates submission of electronic version of theses and dissertations by the researchers in universities with an aim to facilitate open access to Indian theses and dissertations to the academic community world-wide.

Tamizhchelvan and Dhanavandan (2016)[8] has reviewed National Digital Library in a brief manner about its features, initiatives of India.

Features of NDL

National Digital Library is comprehensive and covered all digitized documents in India with collection of major projects. The major four key aspects of NDL web portal (https://ndl.iitkgp.ac.in/)[9] are discussed as follows:

1. Access
2. Browse
3. Sources
4. Search Strategy

NDL Access:

The Access of the NDL is very simple.

ac.in; ernet.in; gov.in; nic.in; res.in; edu.in; nitsri.net; edu

It can be accessed with registration in the email address ending with the above mentioned. One time registration is required after wards one can search and download the documents available in the National Digital Library.



Figure 1. Registration Instruction

NDL: Browse

By Type of Documents

By type of document, there are eight types available. They are 'Text', 'Audio', 'Video', 'Image', 'Animation', 'Simulation', 'Presentation' and 'Application'.

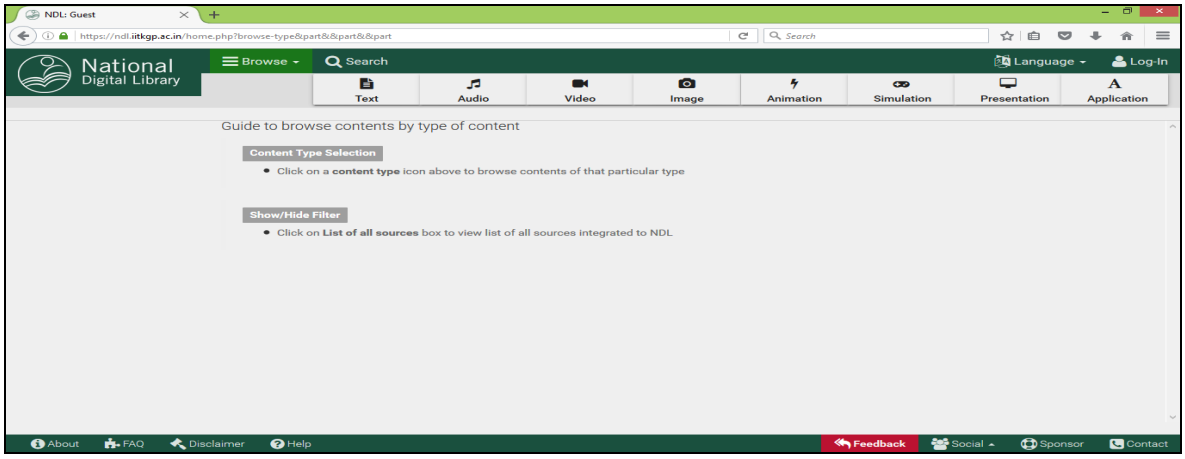


Figure 2. By Type of Document

By Subject

By subject, there three levels have been classified such as First level subject, Second level subject and

Third level subject. These levels are not necessary for all subjects.

The First level

1. Computer science, information & general works (73,930 items)
2. Philosophy & psychology (20,450 items)
3. Religion (20,125 items)
4. Social sciences (160,185 items)

5. Language (25,032 items)
6. Natural sciences & mathematics (88,422 items)
7. Technology (118,179 items)
8. The arts; fine & decorative arts (11,561 items)
9. Literature & rhetoric (100,340 items)
10. History & geography (39,041 items)

The Second level and Third level of subjects are classified according to Dewey Decimal Classification including the first level.

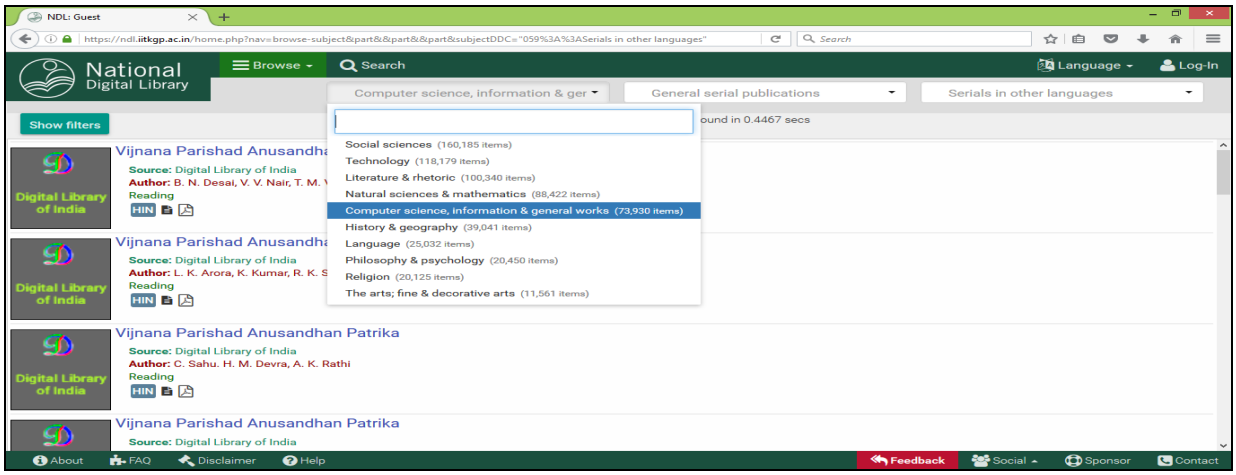


Figure 3. By Subject of Document

By Source

The National Digital Library has been participated about 100 institutions resources in the project.

S. No.	Category	Item Count
1	Digital Library Of India	500877
2	Librivox	206074
3	Springer-E-Book	105368
4	OECD iLibrary	102017
5	India Academy of Science	88596
6	KrishiKosh - Indian National Agricultural	49653
7	IISc - Institutional Repository	40139
8	Inflibnet-Shodhganga	36313
9	West Bengal Public Library Network	30972
10	Jadavpur University	30437
11	South Asia Archive	29975
12	Osmania University Digital Library	24471
13	IIT Bombay	16744
14	Gokhale Institute of Politics and Economics	16648
15	ICRISAT - Institutional Repository	13427
16	IIT Roorkee - Thesis	13191
17	Manipal University	12813
18	CRC Press - E-books	11021
19	IIM Ahmedabad	10954
20	CSIR- Indian Institute of Chemical Technology	10368
21	NPTEL	10335
22	Central Marine Fisheries Research Institute	10122
23	University of Mysore	10109
24	Aligarh Muslim University	8835
25	ICRISAT - Open Access Repository	8184
26	CUSAT - Institutional Repository	8108
27	Bharathidasan University	7837
28	Indian Institute of Astrophysics	6495
29	Khan Academy	6191
30	CSIR - National Metallurgical Laboratory	6052
31	CSIR - National Aerospace Laboratories	5786
32	Directory of Open Access Journals	5504
33	IIT Delhi	5256
34	ISI Kolkata	5167
35	Microsoft Research	5015
36	CSIR - National Institute of Oceanography	4679
37	Raman Research Institute	4609

38	CUSAT - Thesis	4059
39	NIT Rourkela - Thesis	3230
40	NCERT	3166
41	Bombay High Court Judges' Library	3154
42	IUCAA-Pune	3067
43	MIT OpenCourseWare	3012
44	CSIR - Central Electrochemical Research Institute	2551
45	CSIR - Central Glass and Ceramic Research Institute	2517
46	IISc - Thesis	2372
47	NIT Rourkela - Institutional Repository	2288
48	MoES - Indian National Centre for Ocean Information Services	2232
49	Sree Chitra Tirunal Institute for Medical Sciences' Technology	2062
50	Vidya Prasarak Mandal	1939
51	Inflibnet - Shodhgangotri	1930
52	Birbal Sahni Institute of Paleobotany	1777
53	IIT Kharagpur	1705
54	CSIR - National Physical Laboratory	1563
55	Inflibnet - Inflibnet's Institutional Repository	1470
56	SCERT Andhra Pradesh	1353
57	Society For Natural Language Technology Research	1172
58	IIT Gandhinagar	1157
59	Karnataka Secondary Education Examination Board	1142
60	University of Kashmir	1009
61	IIT Hyderabad	1000
62	Tamil Nadu Agricultural University	996
63	CSIR - Open Access Repository of Indian Thesis	984
64	Swami Vivekananda Yoga Anusandhana Samsthana	949
65	S.N. Bose National Centre for Basic Sciences	946
66	IISER Bhopal	944
67	Kerala University of Health Sciences (KUHS)	888
68	Aryabhatta Research Institute of Observational Sciences (ARIES)	807
69	Madras Diabetes Research Foundation	800
70	Inflibnet - N-LIST - Oxford Scholarship Online	771
71	Pondicherry University	751
72	Spoken Tutorial	745
73	ICAR - Indian Institute of Spices Research	725
74	Central Board of Secondary Education	688
75	The Physics Classroom	668
76	The Tamil Nadu Dr. M.G.R. Medical University	614
77	IIT Bhubaneswar	609
78	Maharaja Sayajirao University of Baroda	543
79	IACS Kolkata	537
80	IIT Guwahati	513
81	IIM Kozhikode	509
82	Indian Institute of Geomagnetism	495
83	School of Cultural Texts and Records (SCTR) Jadavpur University	451
84	Project OSCAR	373
85	Chitkara University	339
86	Indira Gandhi Institute of Development Research (IGIDR)	334
87	Indraprastha Institute of Information Technology Delhi	264
88	National Institute of Immunology	228
89	Pandit Deendayal Petroleum University	192
90	Graduate Aptitude Test in Engineering	183
91	West Bengal State Council of Vocational Education Training	175
92	Human Rights Law Network	173
93	DRDO - Institutional Repository	169
94	PhETn Interactive Simulations	131
95	Joint Admission Test for M.Sc.	75
96	Satyajit Ray Society	38
97	Joint Admission Board of IITs	37
98	West Bengal Board of Secondary Education	22
99	Tripura Board of Secondary Education	19
100	West Bengal Board of Primary Education	4

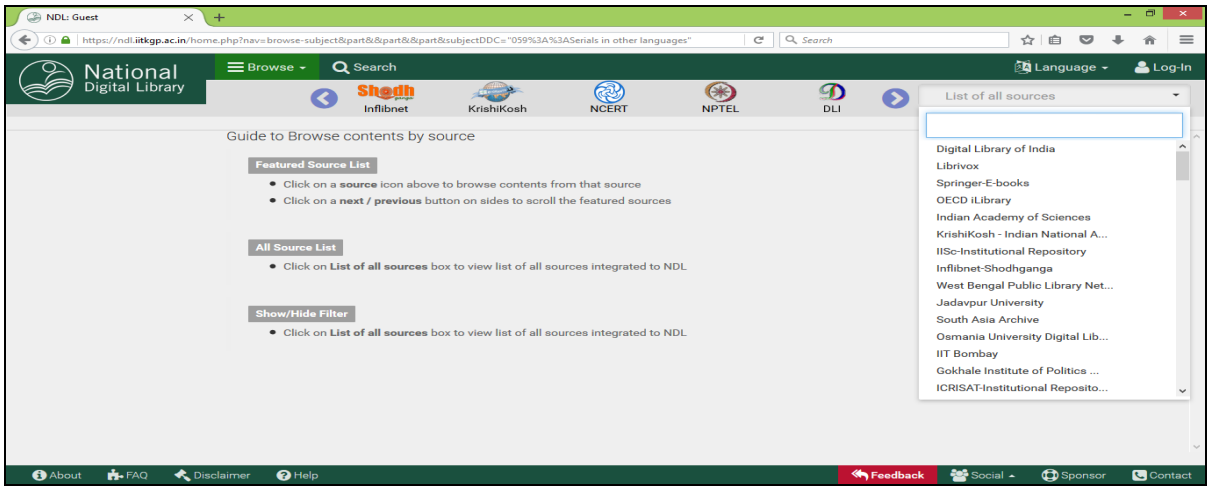


Figure 4. By Sources of Documents

By Language

At present three languages have been given as optional, further, the number of languages will be increased. The language option is given on the right side of the screen. This option is used to have both browse and search. One can choose language option before the search or browse or otherwise after the search results.

- English
- Hindi
- Bengali

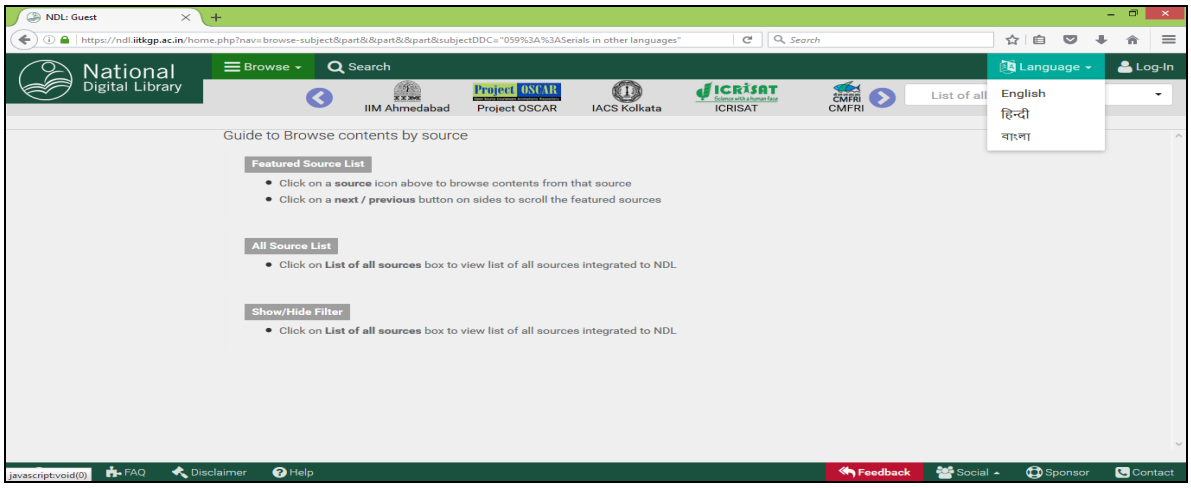


Figure 5. By Language wise

Search Strategy

The search strategy is very much simple in NDL. There are two way, one can search the library. The first one is without login, one can search up to metadata level for all the resources. The second one is with login, one can search and download the documents.

There are two search methods

1. Simple search
2. Advanced search

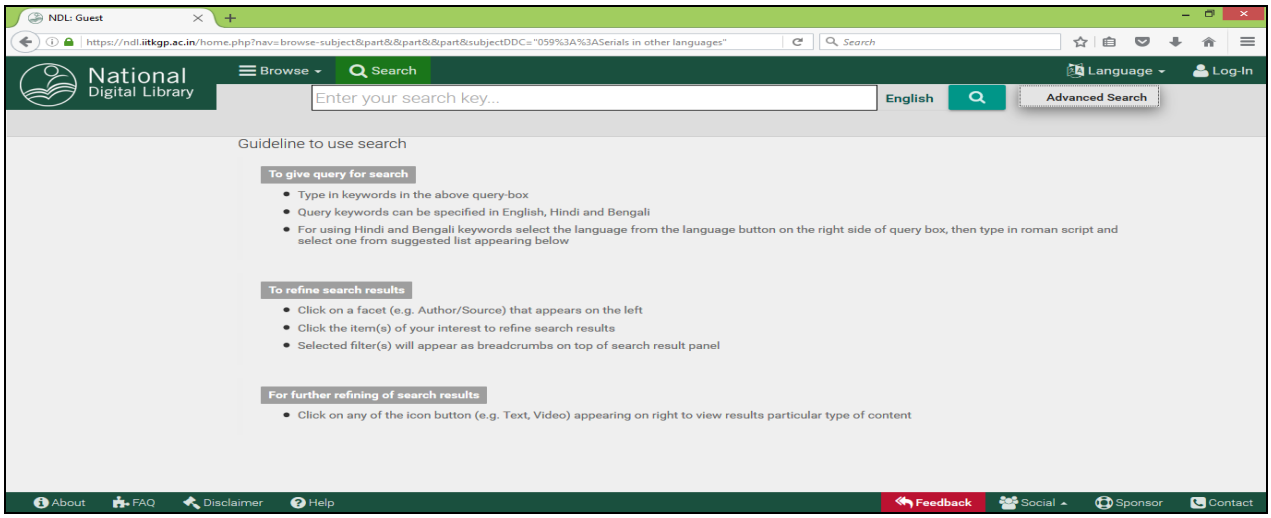


Figure 6. Simple Search

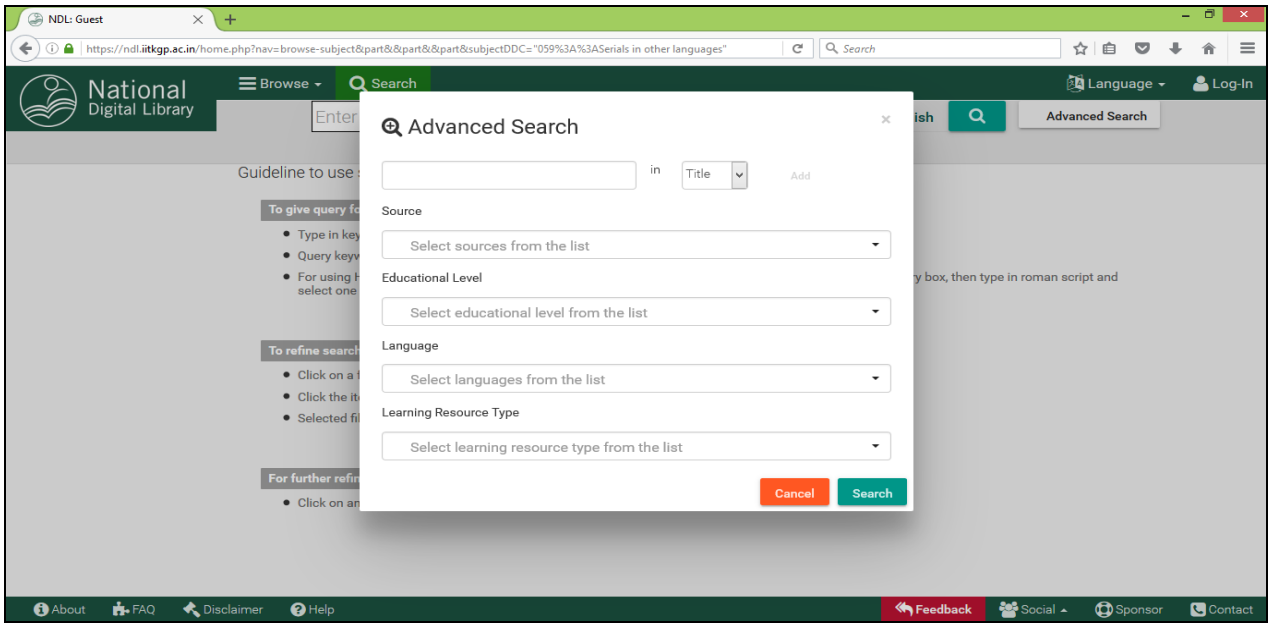


Figure 7. Advance Search

The Search Results

The search results can be further refined using side bar like the sources science direct the bibliographic database namely Scopus. There are seven filters available:

Author
Language
File Format
Learning Resource Type
Education Level
Difficulty Level
Educational Degree

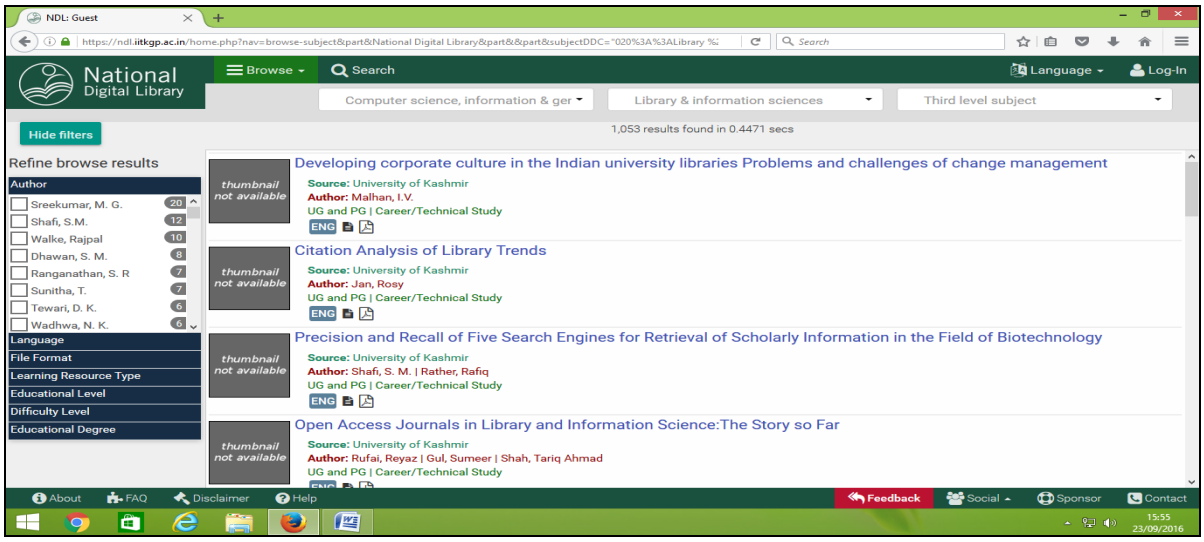


Figure 8. Search Result with Refine results

Search Results:

The search and browsing results are shown with in the frame of National Digital Library boundary as shown in the figures 10 and 11. The original contents will be accessed either from NDL server or the origin of source server.

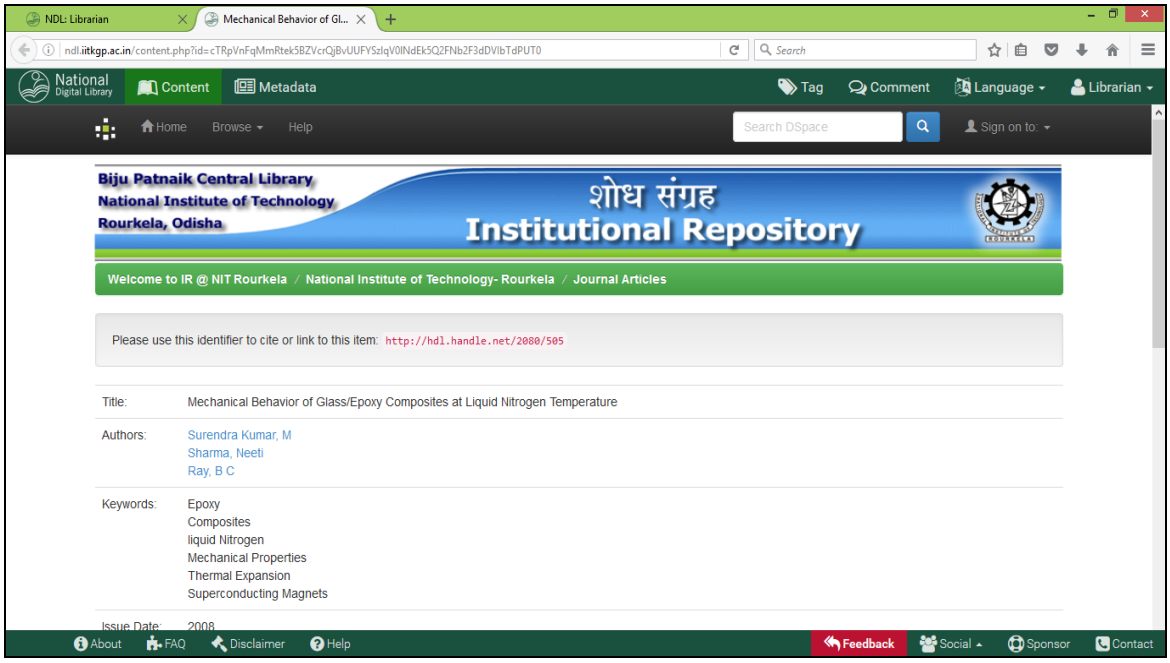


Figure 9. Results in NDL boundary



Figure 10. Results of Source institute result

Conclusion

It is very good effort that the Indian government has taken the initiatives. Further, it is to be strengthened by voluntarily adding resources from different institutions including private institutions. It has strong search strategy. It is one of the main sources of accessing Indian institutional repositories in single window Platform with strong search strategy. There are union catalogues maintained by the INFLIBNET and DELNET and this NDL is union catalogue of institutional repositories of India.

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