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From the Desk of Chief Editor . . .

I feel a sense of relief with the publication of **Research Fronts** (A Peer Reviewed Journal of Multiple Sciences, Arts and Commerce) **Vol. X 2020** in this Covid-19 Pandemic situation world-wide. As usual, a few notable features of this volume are as follows. **One**, it has maintained the diversity of research papers encompassing the disciplines of economics, geography, business management, library science and zoology. **Two**, Inclusion of research papers from Gujarat (Western India), Madhya Pradesh & Chhattisgarh (Central India) and West Bengal (Eastern India) amply demonstrates a wide spatial coverage that gives it status of national journal. **Three**, the issue of core and periphery, though applied for the major tribal languages by taking up the Chotanagpur and Its surrounding region, would attract researchers from other disciplines to venture in this direction. **Four**, Man-wild life interaction, or conflict, or co-existence is a very pertinent issue addressed in a research paper entitled Tiger Roaming for Survival – A case study of Rajnandgaon district, Chhattisgarh, India.

I take an opportunity to appreciate the authors who have made invaluable contributions not only for sending their original research papers, but also for directly helping the regular publication of this journal since 2011.

- Dr. Krishna Nandan Prasad

Development of Institutional Repository (IR) for The Dept. of Library and Information Science, Faculty of Arts, The Maharaja Sayajirao University of Baroda, Vadodara: A Pilot Study.

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ABSTRACT

Institutional Repository (IR) is the boon for any academic Institution. It really helps in collecting, managing, disseminating and preserving scholarly works created in digital form by users in individual academic institutions. IR is created from the research output of the faculty members and students. The DSpace is fairly powerful software and a successful digital preservation tool. The work of the IR at the Department of Library and Information Science is still in the primary phase. Efforts are being made by the author to add more and make it accessible to all. Creating DSpace at department, faculty and university levels can not only help in preserving research documents of students and researchers, but also enable dissemination of information regarding the type research being undertaken across the departments of the concerned university, college or university. An attempt has been made to explain the process of DSpace creation in the present exercise.

Keywords: IR, DSpace, E-Prints, Fedora, Greenstone.

Introduction:

We are living in an information age where we can access information from any part of the world with a click of a mouse. Information explosion is having profound impact on library and information Services. Institutional Repository (IR) is the boon for any academic institution. It really helps in collecting, managing, disseminating and preserving scholarly works created in digital form by users in individual academic institutions. IR is created from the research output of the faculty members and students.

Institutional Repository:

An institutional repository is a set of services that a University/Department offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members (Vishala and Vandi, 2007).

Institutional repositories as a means to manage and preserve effectively an institution's knowledge base and intellectual assets results in the content of institutional repositories expanding beyond e-prints to include research data, e-learning materials and other forms of institutional intellectual outputs, which are generally not published or preserved elsewhere (Bradford, 2006). It needs to be ensured that content within the repositories remains accessible and retains its authenticity, reliability and integrity for as it is needed (Shinde, 2008).

Definition:

An Institutional repository is an organization based set of services which the organization 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" (Clifford Lynch, 2003).

According to Barton and Walker of Massachusetts Institute of Technology (MIT) library, "institutional Repositories are designed to manage, host preserve and enable distribution of the scholarly output of an institution" (Prabhakar and Manjula Rani, 2018, p. 6904).

Components for Creating Institutional Repositories:

Creating and developing an institutional repository are mainly based on hardware, software and staff requirements.

- 9 **Hardware:** Hardware required can be a simple desktop computer workstation or a file server.
- 10 **Software**: There are many open source software packages for running a institutional repository (i.e. DSpace, E-Prints, Fedora, Greenstone, Archimede etcetera), and commercial software are Berkeley Electronic Press and Simple DL.
- 11 **Staff requirement**: The developments in Information Communication Technologies has smartened library professionals in taking leadership roles in planning and building institutional repositories, fulfilling their role as experts in collecting, describing preserving and providing. However, staff requirements vary according to the institution's ambitions for repository. Some of the main jobs are involved in institution repository are formulating content policies, advocacy of software and hardware using, user training and a liaison with a wide range of institutional departments and external contacts, technical implementation, customization and management of repository software, manage metadata fields and quality, and create usage repots and tracks of the preservation issues (Prabhakar and Manjula Rani, 2018).

Benefits of Institutional Repository:

The benefits of repositories to institutions and individuals are numerous and can be grouped into the following categories:

- 1. IR increases visibility and prestige. Institutional Repository may be used to support marketing activities to attract high quality staff, students and funding.
- 2. IR stores of all types of institutional output, including theses, Dissertations, Assignments', Project Reports, unpublished literature.
- 3. IR supports for learning and teaching. Links may be made with the virtual teaching environment and library catalogues.
- 4. IR helps in standardization of institutional records. The compilation of "institutional records" and individual online dossiers linked to the full text of articles become possible.

5. IR has great role in keeping track of and analyze research performance of researchers.

6. IR breaks down publisher's costs and permissions barrier, alleviation of requirement to trust publishers to maintain information in the long term, without any commercial benefit for the authors.

Thus, institutional repositories promote a wider communication (Pickton and Barwick, 2006).

Objectives of the Study:

The main objective of the paper is to discuss the experience in developing an institutional repository at the Dept. of Library and Information Science, Faculty of Arts, The Maharaja Sayajirao University of Baroda, and suggest overcoming the challenges.

DSpace (Www.Dspace.Org) - An Overview:

Hewlett-Packard Company (HP) awarded \$1.8 million to the MIT Libraries in March 2000, for an 18-month collaboration to build DSpace, a dynamic repository for the intellectual output in digital format of multi-disciplinary research organizations. HP Labs and MIT Libraries released the system worldwide on November 4, 2002, under the terms of the Berkeley Standard Distribution (BSD) open source license (Smith and others, 2003). As an open source system DSpace is now freely available to other institutions to run as-is, or to modify and extend as they require meeting local needs.

Why to Use Dspace?

The reasons why to choose DSpace are;

- 3. DSpace is an open source technology platform which can be customized or extend its capabilities.
- 10. DSpace is a service model for open access and/or digital archiving for perpetual access.
- 4. DSpace is a platform to build an IR and the collections are searchable and retrievable by the Web.

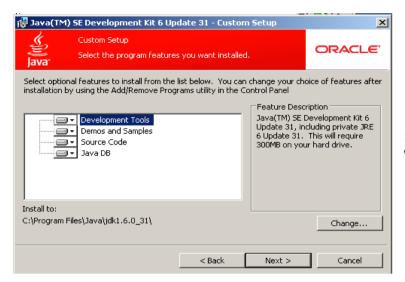
- ➤ To make available institution-based scholarly material in digital formats. The collections will be open and interoperable.
- 5. It enables to choose the default language: The DSpace web application is available in over twenty languages so if English is not the local language one can customize.
- 6. It enables to configure Browse and Search: Due to Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) compatibility, one can decide what fields are to be displayed for browsing, such as author, title, date etcetera on the DSpace website. One can also select any Metadata field depending upon the search interface.
- 7. Configurable database: One can choose either Postgres or Oracle for the database which DSpace manages.

Installing DSpace 1.8.2 on Window Xp/7/Vista:

Before starting DSpace installation, it is essential to keep the following software installed. The important softwares are listed below along with their respective links:

Prerequisite Software

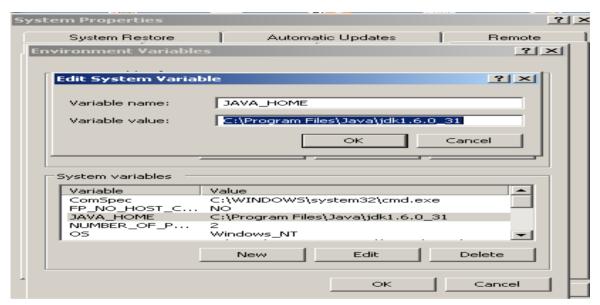
- 1. Microsoft Windows 2000/XP/Vista
- 2. Java JDK 6 or later www.java.sun.com
- 3. Apache-maven-3.0.4 or later (Java build tool) http://maven.apache.org
- 4. Apache-ant-1.8.3 or later (Java build tool) http://ant.apache.org
- Relational Database-PostgreSQL or Oracle) www.postgresql.org/ftp
- 6. Servlet Engine: (Apache Tomcat 6.0.7 or Jetty) http://tomcat.apache.org



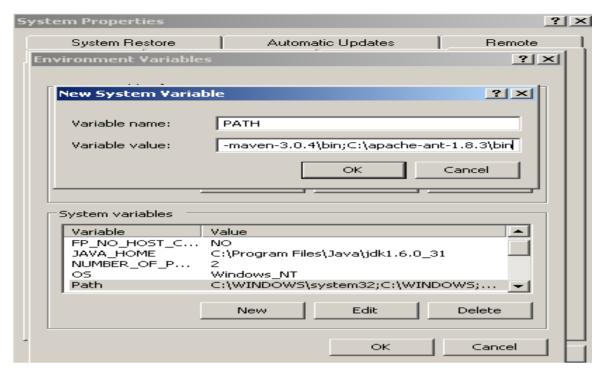
Installation of Java~6 on Window machine

Setting up Environment Variable for Java

Add into system variable JAVA_HOME with value C:\ProgramFiles\Java\jdk1.6.0_31 and



Add into system Variable in **PATH** C:\Program with value C:\programFiles\Java\ jdk1.6.0_31\bin



Installing Maven and Ant

- 1. Copy apache-maven-3.0.4 form source directory in to C:\drive
- 2. Copy apache-ant-1.8.3 form source directory into C:\drive

Setting Variable for Maven and ANT

Add system variable **PATH** with value C:\apache-maven-3.0.4\bin and C:\apache-ant-1.8.3\bin separated with;

1. Installation check for Java, Maven and Ant

Go to Run | Command prompt (cmd)

type java –version

type maven -version

type ant -version

2. Checking java/Maven/Ant

```
Microsoft Windows XP [Version 5.1.2600]

(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\iima\java-ver
'java-ver' is not recognized as an internal or external command,
operable program or batch file.

C:\Documents and Settings\iima\java-version
'java-version' is not recognized as an internal or external command,
operable program or batch file.

C:\Documents and Settings\iima\java-version
java-version' is 6.0_31"

Java(TM) SE Runtime Environment (build 1.6.0_31-b05)

Java HotSpot(TM) Client UM (build 20.6-b01, mixed mode, sharing)

C:\Documents and Settings\iima\mun -version
Apache Maven 3.0.4 (r1232337; 2012-01-17 14:14:56+0530)

Maven home: C:\apache-maven-3.0.4\bin\.

Java version: 1.6.0_31, vendor: Sun Microsystems Inc.

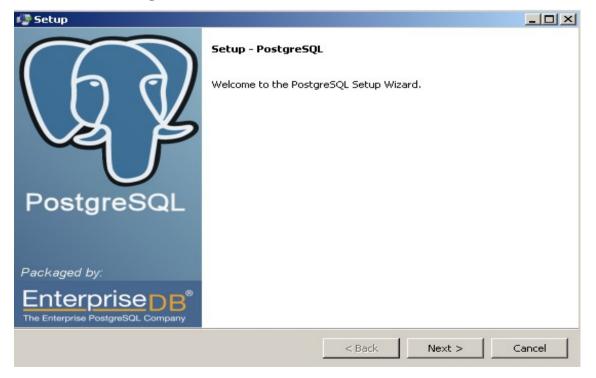
Java home: C:\Program Files\Java\jdk1.6.0_31\jre
Default locale: en_US, platform encoding: Cp1252

OS name: "windows xp", version: "5.1", arch: "x86", family: "windows"
'cmd' is not recognized as an internal or external command,
operable program or batch file.
C:\Documents and Settings\iima\ant -version
Apache Ant(TM) version 1.8.3 compiled on February 26 2012

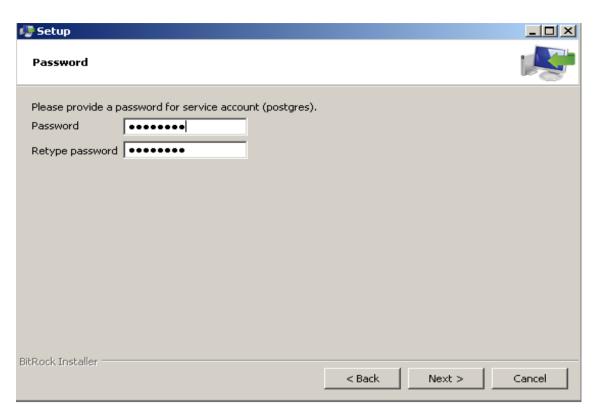
C:\Documents and Settings\iima\ant -version
Apache Ant(TM) version 1.8.3 compiled on February 26 2012
```

Installing Postgresql-9.1.3-1

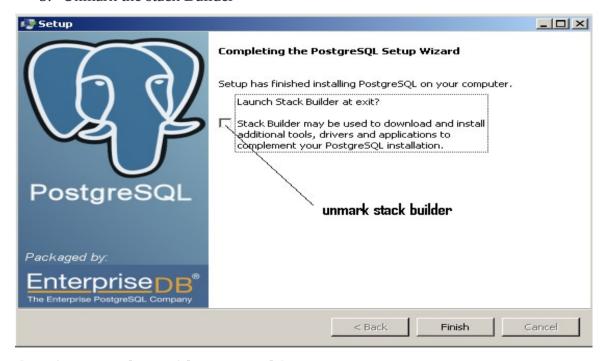
3. Execute Postgre SQL- 9.1.3-1 - windows.exe from source



4. Provide password "postgres"



5. Unmark the stack Builder

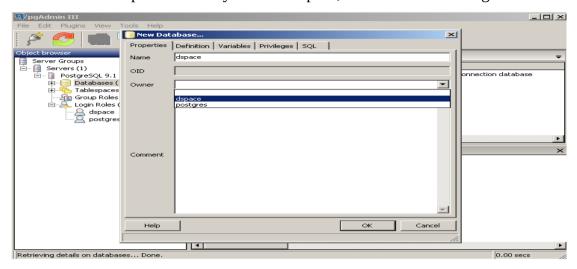


Creating a Database with Postgresql 9.1

After installing ensure the PostgreSQL service is running, and then run pgAdminIII Start >PostgreSQL 9.1 >pgAdminIII. Connect to the local database as the postgres user

and,

Create a 'Login Role' (user) called dspace with the password dspace. Create a database called dspace owned by the user dspace, with UTF-8 encoding



Installing Dspace-1.8.2

Copy **DSpace 1.8.2** from source package into C: / or download the DSpace source from SourceForge and un tar it (Win Zip will do this) from

URL: http://sourceforge.net/projects/dspace

Update the Config File

a. Update paths in [dspace-source]\dspace\config\dspace.cfg.

Note: Use forward slashes / for path separators, though you can still use drive letters, e.g.:

dspace.dir = C:/DSpace

- b. Make sure you change all of the parameters with file paths to suit, specifically:
- c. dspace.dir config.templatelog4j.properties
- d. config.template.log4j-handle-plugin.properties
- e. config.template.oaicat.properties
- f. assetstore.dir log.dir
- g. upload.temp.dirreport.dirhandle.dir

Create the Directory for the DSpace Installation (e.g. C:\DSpace)

Generate the Dspace Installation-1 (Maven)

Generate the DSpace installation package by running the following command (cmd) from the [dspace-source]/dspace/ mvn package or install [enter]

Note #1: This will generate the DSpace installation package in the [dspace-source]/dspace/target/dspace-[version]-build.dir/ directory

Note #2: The DSpace installation package is initialized for PostgreSQL

6. Maven will generate the necessary packages from internet

7. Generate the Dspace Installation-2 (Ant)

Antwill install the DSpace in the machine (Screen will look like ...)

```
Using default lead, provided log configuration, if unintended, check your depace of gor (log init config) de Configuration, if unintended, check your depace of gor (log init config) descripted of create index disectory: /dspace/search or godspace.search.DSIndexer @ Unable to create index disectory: /dspace/search or godspace.search.DSIndexer @ Updating and Cleaning Index 27 13:24:34,843 INFO org.dspace.search.DSIndexer @ Updating and Cleaning Index.

| Ijaval 2012-05-27 13:24:34,953 INFO org.dspace.search.DSIndexer @ Done with indexing started: 1338105274953 [javal Ended: 1338105274953 [javal Ended: 1338105274953 [javal Elapsed time: 0 secs (250 msecs) [echo] [echo]
```

Create an Administer Account

After getting build successfully massage, administrator account may be created.

Create an administrator account, by running the following from

C:\DSpace\bin dspace. Create - administrator

Fill up the required information

```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\iima\cd \

C:\\cdot dspace

C:\\cdot dspace\cdot bin

C:\\dspace\bin\\dspace create-administrator

Using DSpace installation in: C:\\dspace

Creating an initial administrator account

E-mail address: openbharat@gmail.com

First name: Bharat

Last name: Chaudhari

WARNING: Password will appear on-screen.

Password: bharat123

Again to confirm: bharat123

Is the above data correct? (y or n): y_
```

Installing Apache Tomcat 1.7

8. Execute apache tomcat 1.7.exe to install tomcat



Define a Context Path for DSpace Tomcat Configuration

Go to C:\Program Files\Apache Software Foundation\Tomcat 7.0\conf

Alternatively, instruct the Tomcat installer where to find the Dspace web application(s). As an example, in the <Host> section of the [tomcat]/conf/server.xml one could add some lines similar to the following (but replace [DSpace] with the installation location):

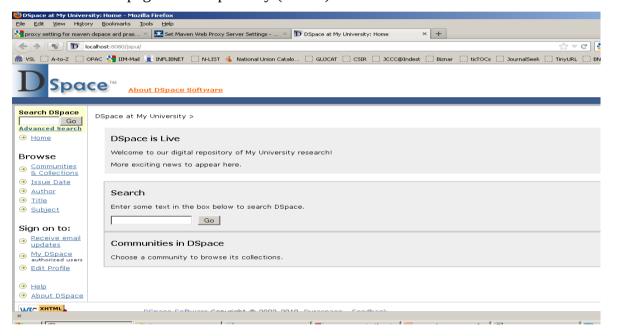
Copy the text codes into server.xml from [source files] contextpath.txt

Start Tomcat Service:

h. Start the Tomcat service and browse to either http://localhost:8080/jspui or http://localhost:8080/xmlui.

One should see the DSpace home page for either the JSPUI or XMLUI, respectively. Note: Now fill up required information; such as email address, account and password etc. Now finally one would see the DSpace home page. It will be shown as mentioned below:

The main page of the repository (JSPUI)



The main page of the repository (XMLUI)



Above mentioned figures are the very first pages of DSpace that appear after the completion of installation. Important locations are being pointed out in this figure such as,

header, location bar, navigation bar and footer. From here actual work starts to publish the digitized documents. Before uploading the documents one should create communities and collections. Dept.of Library and Information Science, The M S University of Baroda has created some communities and have uploaded the relevant documents.

The Dept. of Library and Information Science, The M S University Of Baroda:

The Department of Library and Information Science is offering professional degree courses in the Faculty of Arts of the University. Established in 1956, starting with a Post- Graduate Diploma in Library Science, today the department offers three-degree courses, such as, Bachelors, Masters and Ph. D. degrees in Library and Information Science. This department has been generating professionals, who are in great demand in academic, research and industrial libraries in the State of Gujarat as well as outside. The Department has a computer laboratory with twenty computers. Modern technology is excessively used in teaching and learning process.

Need of Institutional Repository for Dept. of Library and Information Science:

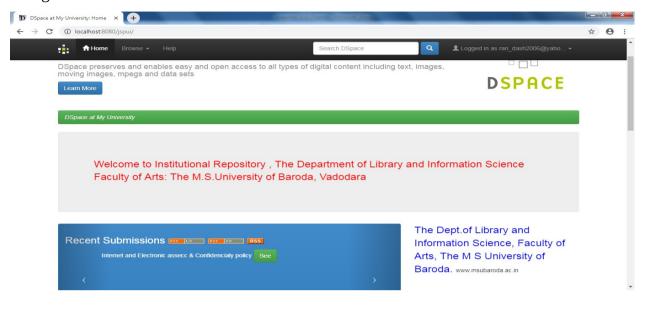
The work of uploading projects and assignments on the IR will help the students who are in pursuit of taking up new research projects. The UGC provides mandate "for submission of electronic version of theses and dissertations by the researchers in universities with an aim to facilitate open access to Indian theses and dissertations to the academic community world- wide".

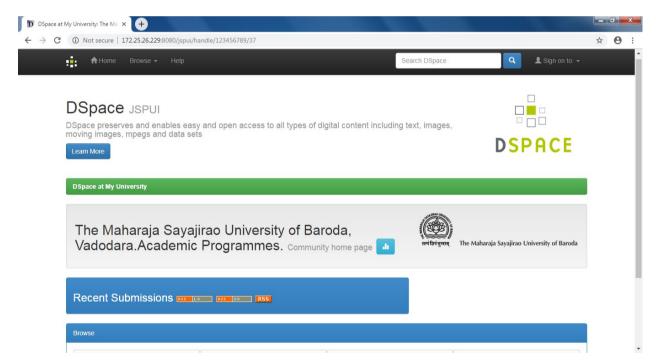
Considering the above points, the author has tried to create an IR for the Dept. of Library and Information Science, Faculty of Arts of The Maharaja Sayajirao University of Baroda as a pilot project. But, if this can be created by each and every department individually and interlinked with LAN having IP address of the University website, then it would be a useful source for the University to make data in a single repository, from which it can be accessed by all. Mainly, this can be an additional benefit from the point of view of IQAC and NAAC. This will act as a main source of data repository.

Customization of the User Interface:

There are two interfaces for Dspace: JSPUI and XMLUI. For this case study, basic customization of the JSPUI interface was done, which involves basic changes in the

header, footer, style sheet and side bar. Basic understanding of HTML is required to make changes in the header and footer files.



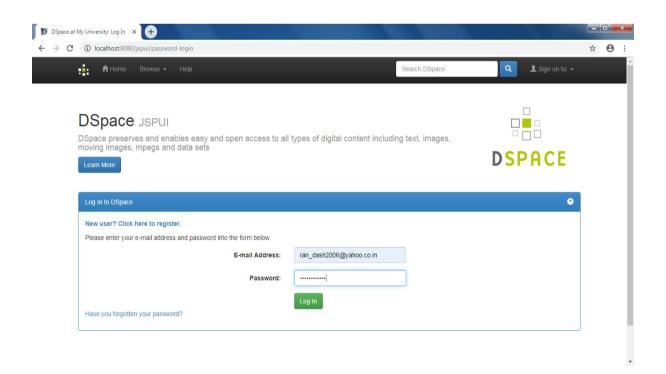


The steps are as follows: Open the DSpace page

http://172.25.26.229:8080/jspui/password-login with email address and Password.

localhost:8080/isp

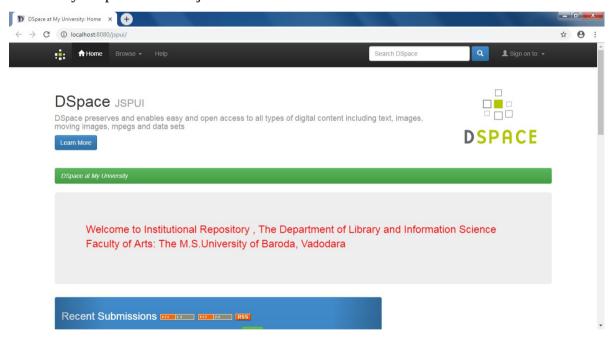
D DSpace at My University: Home X + ← → C ① localhost:8080/jspui, ☆ 0 : ↑ Home Browse ▼ Help Search DSpace Sign on to: ▼ My DSpace Receive email updates DSpace JSPUI Edit Profile DSpace preserves and enables easy and open access to all types of digital content including text, images, moving images, mpegs and data sets **DSPACE** Learn More We Fa Recent Submissions RSS 20 RSS







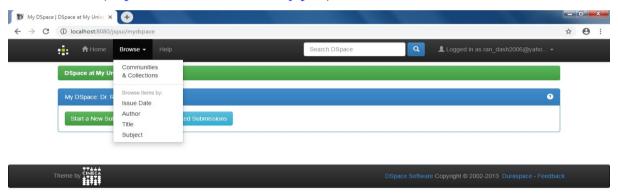
- 9. Then go to My Dspace and log on to Dspace; Then on the screen you will see.
- 10. My DSpace: Dr. Ranjita N. Dash.

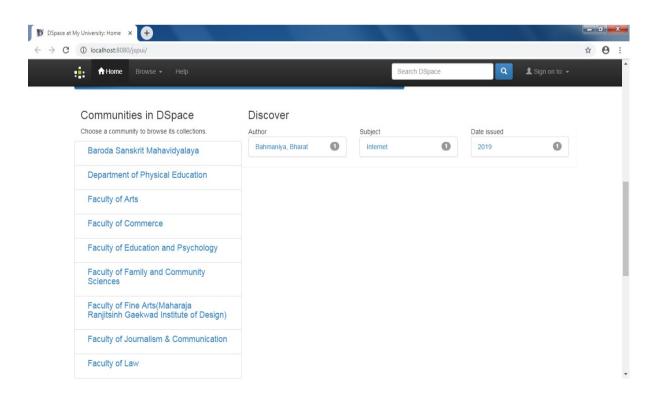


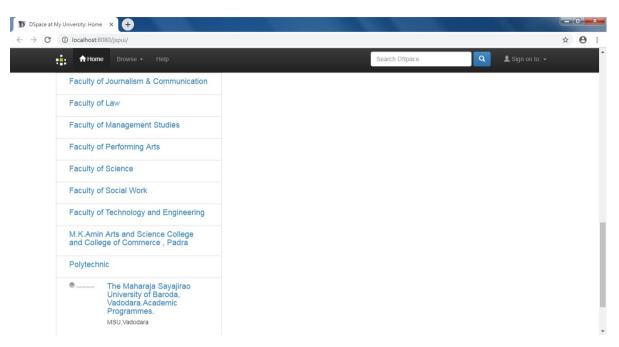
In the next step, changes were made for adding copyright line in the footer. Default file in the layout folder of Dspace, which is reflected in the next screenshot. After that in the navigation bar of Dspace on the left side there is link known as "Administer" which further has links of Edit News (top bar and side bar) in which the HTML commands for the tag line, "Welcome to Institutional Repository, The Department of Library and Information Science, Faculty of Arts, The M S University of Baroda, Vadodara." was given and for the side news, sometimes HTML commands for Google

calendar and dictionary may also be given. Important links to the other repositories can also be given at this place.

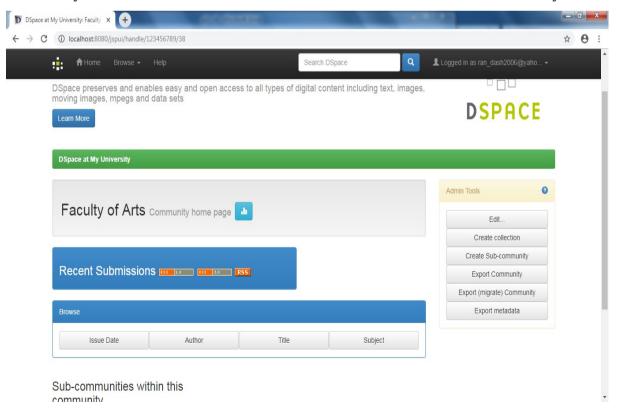
Creation of communities and sub communities for The Maharaja Sayajirao University of Baroda, the hierarchy of Dspace is highly suitable for a university setup. The faculties and the departments of the University can be organized as communities and sub-communities in Dspace. The Maharaja Sayajirao University of Baroda has fourteen faculties which were organized as top level communities in Dspace and their respective departments were organized as sub- communities. There is no limit for the creation of communities and sub- communities; however all the tasks can only be performed by the administrator (http://172.25.26.229t:8080/jspui/).







On the right hand side of the webpage there is an option "Create top level community", through which the different communities are created. For creation of subcommunities, the particular top level community has to be clicked and then there is a link to create the "Sub-Community". For creation of sub-communities, the particular top level community has to be clicked and then there is a link to create the "Sub-Community".



The Department of Economics

DSpace at My University Comm. x

The Department of Archaeology and Ancient History

DSpace at My University Search DSpace

DSpace at My University

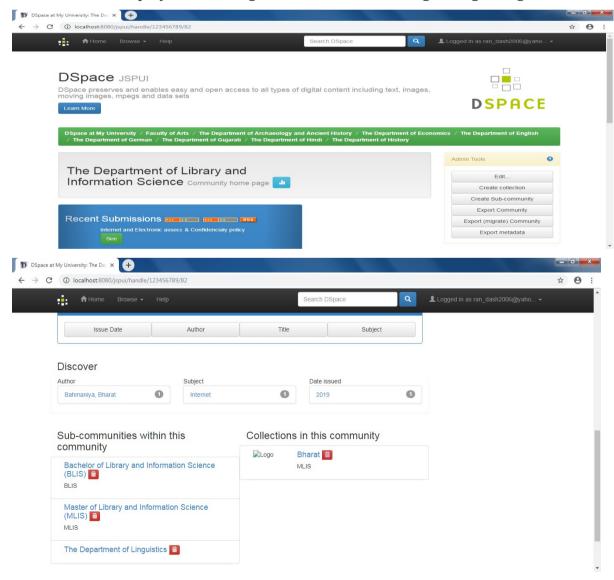
Admin Tools

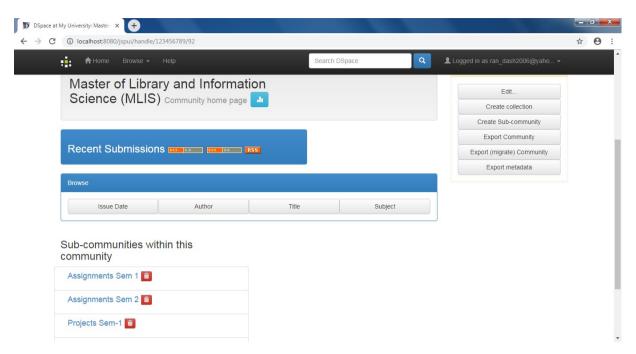
Admin Tools

Create Top-Level Community...

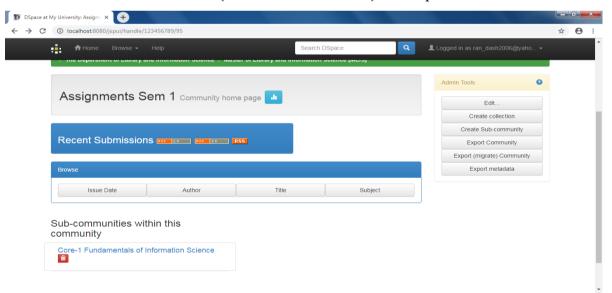
The Department of Archaeology and Ancient History

Collection and uploading of these Communities can maintain an unlimited number of collections in Dspace. Collections can be organized around a topic or by type of information such as projects and assignments finds useful in organizing its digital items.





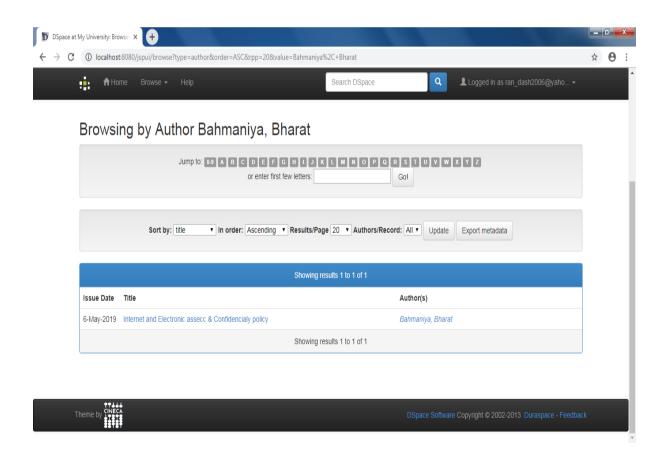
Collections can be created through the link "Admin Tools" under which there is an option "create collection". This is the point where the actual uploading of digital documents is facilitated. For this case study, project works and assignments as digital documents of two communities (Semester one and two) were uploaded.

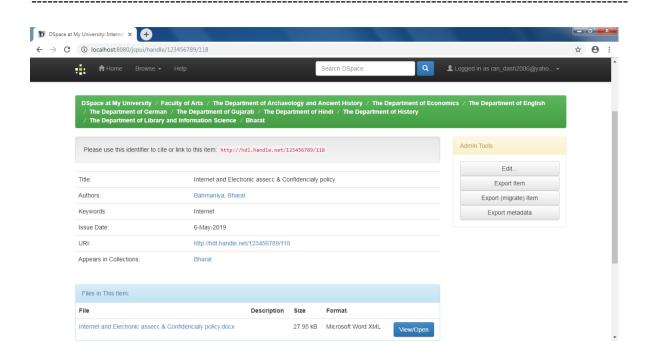


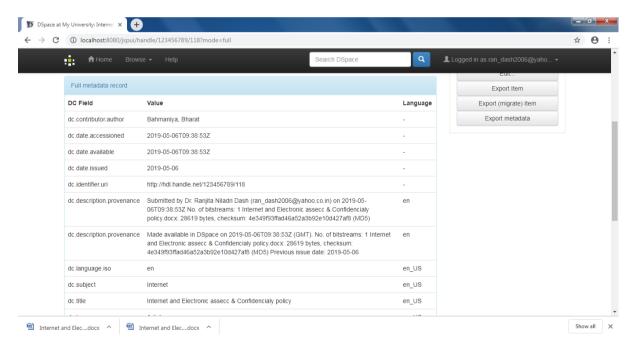
After the creation of these two communities the link "submit to this collection" was clicked and uploading of documents was started. The tasks of uploading these projects and assignments have been completed by the author.

Order: Ascending ▼ Results/Page 20 ▼ Update

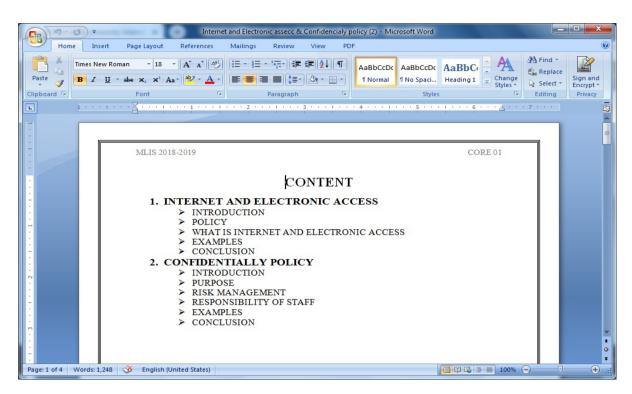
Bahmaniya, Bharat

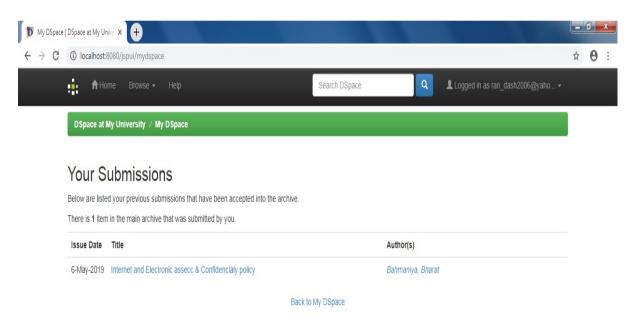






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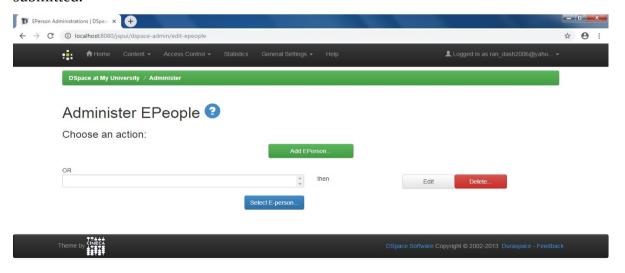


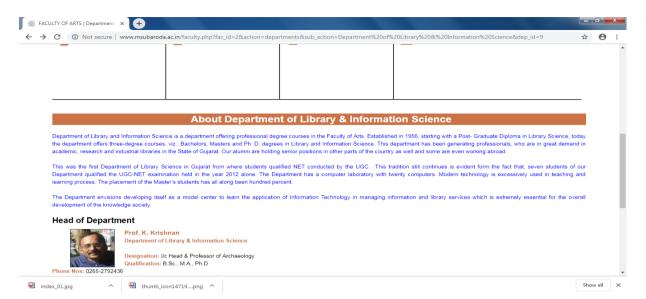




Show all X

E-people are the users of Dspace, who can be assigned roles as submitters and reviewers by the Dspace administrator. Alternatively the users can also self register themselves and submit documents to the Dspace repository. For this case study, the author has created users for the repository in the form of submitters and reviewers. Some members of the Department of Library and Information Science are assigned roles as metadata editors through which they can edit metadata for the digital documents submitted.





All the faculties of The M.S. University of Baroda have "deans" as their head. A Dspace account for the dean of each faculty is created e.g. "Dean.Arts" and they are registered with the Dspace software. All the Deans can act as reviewers for the PhD students and teachers who will submit pre-prints or post-prints to the repository.

The Ph.D. scholars will be given rights as "submitters" to their specific sub-community. e.g. a student of the Department of Political Science can submit an article to the sub-community Political Science, which will be reviewed by the Dean of Arts and the article will be committed to the archive by the metadata editor of the staff of the Political Science Department.

Conclusion:

Institutional repositories are the face index of any university which reflects the status of its strength in the form of research productivity. Therefore, importance should be given for the development of Institutional Repositories, for which faculty members of each department need to take positive initiative to develop the scientific temper of the university/college/institution. The DSpace is fairly powerful software, which is a successful digital preservation tool. The work of the IR at the Department of Library and Information Science is still in the primary phase. Efforts are being made by the author to add more and make it accessible to all, so that the users of The Maharaja Sayajirao University of Baroda, Vadodara will be benefited by the research output.

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