Planning for Digital Library of Special Collections in Indian Institute of Advanced Study (IIAS) Using Dspace: A Case Study

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Rare documents are the primary sources of historic information. Digital preservation of rare documents restores it from loss, decay and theft. This paper discusses all these aspects with the practical approach planned for digital preservation, collection of its rare documents, conferences, audios of important speakers and other collections of IIAS Library. The preservation of digital information and brief installation process of Dspace are an important part of this discussion. Presently IIAS library has opted Dspace software for the development of digital archive.

Keywords: Digital Library, Digital Preservation, IIAS Library, DSpace, Institutional Repository

1.   Introduction

Information Technology is being widely used in Library and Information Science. In modern era Library and Information Centres have been moved to acquiring, maintaining and providing resources in digital format. Digital preservation is global information management problem for Library and Information Centres therefore it is big issue for the library professionals to meet the challenges. With the wide-scale adoption of the internet and the rise of the WWW, the world has been overwhelmed by digital information. Digital data is being produced on a massive scale by individuals and institutes: some it is born, lives and dies only in digital form. Digital preservation is a complex issue involving many different aspects and views. Considering many aspect for special collections of Indian Institute of Advanced Study (IIAS) library have been formulated for long term digital preservation.

2.   Historical Background of IIAS

The Indian Institute of Advanced Study is a prestigious research institute based in Shimla, India. It was set up by the Ministry of Education, Government of India in 1964 and it started functioning from October 20, 1965. The building that houses the Institute was originally built as a home for Lord Dufferin, Viceroy of India from 1884 - 1888 and was called the Viceregal Lodge. It housed all the subsequent viceroys and governors general of India. It occupied the Observatory Hill, one of the seven hills that Shimla is built upon.

Many historic decisions have been taken in the building during the Indian independence movement. The Shimla Conference was held here in 1945. The decision to carve out Pakistan and East Pakistan from

India was also taken here in 1947. After India gained independence, the building was renamed Rashtrapati Niwas and was used as a summer retreat for the President of India. However, due to its neglect, Dr. S Radhakrishnan decided to turn it into a centre of higher learning.

3.   Collection Strength of IIAS library

The Institute has a very impressive and one of the biggest library in social science and humanities in India. It has grown into one of the most prestigious and well-equipped academic resources of the country. The library's collection was enriched by the acquisition of private collections of eminent scholars. Organizations like the British Council, the Asia Foundation, and League of Arab Nations have made generous gifts of hundreds of rare pamphlets and books. Later, the library obtained rare Sanskrit, Arabic and Persian texts and manuscripts containing miniature paintings.

The library has built up a collection of a little over 1.50 lakh volumes of books including around 40,000 back volumes of journals, microfilms and other documents. The present subscription list includes almost 320 journals. The collection of the back volumes of the journals includes many reputed titles like Analysis, Journal of the Asiatic Society of Bengal, Journal of the Bihar and Orissa Research Society, Journal of the American Oriental Society, Journal of Ganganath Jha Research Institute, Mind, Nature, Man and Numerous etc. The collection consists of both primary as well as secondary resources covering both the broad subject areas of research in social sciences and humanities as well as highly advanced areas of interdisciplinary research like science and consciousness, working of mind, various facets of ancient Indian history, culture and civilization, postmodernism, theoretical and cultural studies pertaining to philosophy, religion, political science and sociology, gender and environmental studies, socio-economic planning and development, Gandhian studies, Islamic studies, applied mathematics and the like.

Currently, the main focus of the library is on filling up major gaps in the collection in the areas of research relating to Central Asia, South Asia and Southeast Asia. In fact, the majority of books and periodicals are acquired on the recommendation/selection of scholars in position. Besides the main wing of the Library which consists of English language publications, the Library has developed the following separate wings also which are considered as rare document collections:

- Professor R. C. Majumdar Collection
- Professor H. C. Ray Chaudhuri Collection
- Professor Hari Shankar Srivastava Collection
- Harish Narang Collection
- Bhatnagar Collection
- Punjabi Collection

- Persian Manuscript
- Tibetan Manuscript
- Vinod Sena Collection
- Hindi language publication
- Sanskrit texts

3.1   R C Majumdar Collection

Regarded as India's greatest historian, Professor Majumdar's writings have covered practically all aspects of Indian History with equal command. He combined in himself the acumen of a true historian and the fearlessness of an intellectual par excellence. His mastery over the original sources of Indian history was so much that he hardly consulted secondary writings to re-create the past –as-it-was. His research papers in epigraphy, numismatics and general archeology are as authentic as his papers in history.

Majumdar collection is a special collection on the topics in social science and humanities with more than one thousand documents IIAS library. This collection was created by the library under the guidance and recommendation of special committee. The collection consists of multilingual books on Jain religion and philosophy. There are documents in English, Hindi, San skr it, Pr akr it, Per sian, Pali an d Gujar ati language.

3.2   H C Ray Chaudhuri Collection

Prof. H.C. Ray chaudhuri as a Historian is a milestone in the field of Indian historiography. He was a distinguished scholar and academician. His Political History of Ancient India has deserved commendation from the Students and scholars of India through his thorough research. He had given a toe challenge to the colonial historiography. IIAS library has good collection of Prof. H. C. Roy Chaudhuri.

3.3   Tibetan Collection

The Tibetan Collection at the Indian Institute of Advanced Study is one of the most complete collections in India. IIAS library has almost 100 Tibetan collections. A striking and welcome feature in this collection is its wealth in works of history, biography, legend, and antiquities. There are rare Tibetan collections of books and manuscripts. Some of the materials in the Tibetan collection are in the Tibetan language and script. Since nearly all of it was published in India, Bhutan, and Nepal, with extremely small press runs, this material is virtually irreplaceable, out of print, and unique. The Tibetan materials cover a full range of subjects of Tibetan literature, consisting primarily of books on the many forms of Tibetan religion, mostly Buddhism. Other subjects covered include Tibetan language, Sanskrit language, and the principles of Tibetan Buddhist art and iconography.

3.4   Other Rare Books

There are many other old rare books, which are out of print and not available with any nearby library, are also considered valuable resource of the Indian Institute of Advanced Study library. Our library has hundreds of rare books in different Indian and foreign languages.

4.   Why We Need Digital Preservation?

Indian Institute of Advance Study has one of the best institutes for the higher studies for Scholars and fellows throughout the country. The Collection which has been developed by the IIAS library is unique and rare in nature. After digitizing theses collections, it requires stable and strong   preservation strategy to be implemented so that resources available with the library can be made accessible for longer period. This requires not only implementation of latest available technology but also future of that technology with its transforming into newer one.

The traditional preservation characterizes activity that is concerned with "rescuing the decaying organic materials of value" or with longevity of physical qualities of document. The method of digital preservation include the use of emulation, or re-creation of original hardware and software to inter-pret the source, encapsulation, technology preservation , refreshing , migration and reformatting, data archeology, and output to the analogue media.

5.   What is DSpace?

The DSpace is a joint project of the MIT Libraries and HP labs. DSpace is a digital asset management system. It helps create, index and retrieve various forms digital content. Dspace is adaptable to different community needs. Interoperability between systems is built-in and it adheres to international standards for metadata format.

5.1   Why we choose DSpace?

DSpace is open source software and also have enhanced features as compare to any other digital library software. DSpace has over 700 organizations that are currently using the DSpace software in a produc-tion or project environment. The most common use is by research libraries as an institutional repository; however there are many organizations using the software to host and manage subject based repositories, dataset repositories or media based repositories. That is why IIAS library has opted Dspace to digitize its special collections. Some important features are being mentioned below:

- ⮱   Dspace is an open source technology platform which can be customized or extend its capabilities.
- ⮱   Dspace is a service model for open access and/or digital archiving for perpetual access.
- ⮱   Dspace is a platform to build an Institutional Repository 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.

⮩ Ability to choose the default language: The DSpace web application is available in over twenty languages so if English is not the local language you can customize.

⮩ Ability to configure Browse and Search: Due to OAI-PMH compatibility you can decide what fields you would like to display for browsing, such as author, title, date etc. on your DSpace website. You can also select any metadata fields you would like included in the search interface.

⮩ Configurable database: You can choose either Postgres or Oracle for the database which DSpace manages items and metadata.

6. Installation Process of Dspace on Windows

6.1 Pre-requisite software

Before proceed to start Dspace installation, it is mandatory to keep all required software for successful installation. Below those important software are being listed with their respective links:

⮩ Java JDK (Version: jdk-6u18-windows-i586.exe) http://java.sun.com/javase/downloads/ widget/jdk6.jsp

⮩ Apache Ant (Version: 1.8.8RCI-bin.zip)   http://ant.apache.org/bindownload.cgi

⮩ Apache Tomcat (Version: 6.0.20.exe) http://tomcat.apache.org/download-60.cgi

⮩ PostgreSQL (Version: 8.4.2-1-windows.exe) http://www.enterprisedb.com/products/ pgdownload.do#windows

⮩ DSpace (Version: 1.5.2-src-release.zip) http://sourceforge.net/projects/dspace/

⮩ Apache Maven (Version: 2.2.1-src.zip) http://maven.apache.org/download.html

6.2 Extract source files

(i)   Java JDK   :   C:\Program Files\Java\jdk1.6

(ii)   Apache Maven :   C:\apache-maven-2.2.1

(iii) Apache Tomcat :   C:\Program Files\Apache Software Foundation\tomcat6.0

(iv)   Apache Ant   :   C:\apache-ant-1.6.5

(v)   PostgreSQL   :   C:\Program Files\PostgreSQL\8.4

(vi)   DSpace: C:\Dspace

6.3 Installation Steps

6.3.1 Java .exe file and follow instructions

➲ Run jdk-6u18-windows-i586.exe

➲ Install to the default location

➲ Finish the Installation

➲ Add to PATH : C:\Program Files\Java\jdk1.6.0_18\bin [use semicolon to add existing PATH variable] To set PATH right click on My Computer in the desktop and click properties >> Advanced >> Environment Variables >> System Variables >> Path

➲ Set Environmental Variable (User) :

➲ Click on New button and give as below.

➲ Variable name : JAVA_HOME and Variable value C:\Program Files\Java\ jdk1.6.0_18

➲ Open a new command prompt and run "java -version" to verify that is it

➲ correctly installed?

6.3.2 Install Apache Maven-2.2.1 and Follow Instructions

➲ Unzip the apache-maven-2.2.1.src.zip to C:\ drive

➲ A directory called "apache-maven-2.2.1" will be created.

➲ Add the bin directory (C:\apache-maven-2.2.1\bin) to the system path (use semicolon before adding the new path).

➲ Make sure JAVA_HOME is set to the location of your JDK.

➲ Open a new command prompt and run "mvn -version" to verify that is it correctly installed?

6.3.3 Install Apache Tomcat-6.0.20 and Follow Instructions

➲ Run apache-tomcat-6.0.20.exe → Click Next→ Click "I agree"→ Click Next

➲ Now it will reach the Destination Folder which will be followed as " C:\Program Files\Apache Software Foundation\ Tomcat6.0

➲ You have to define port, username and password as

(i)   Port   :   8080

(ii)   Username :   admin (or as u wish)

(iii) Password :   iias123 (or as u wish)

- ⮑ Click Next
- ⮑ Now it will show C:\Program Files\Java\jre1.6.0
- ⮑ Click Next→ Click Finish
- ⮑ Start the Apache Tomcat Service
- ⮑ Open your favorite browser and type http://localhost:8080/

6.3.4 Install Apache ant 1.8.8 and Follow Instructions

- ⮑ Unzip the file apache-ant-1.8.8RCI-bin.zip to C:\
- ⮑ Add to PATH : C:\apache-ant-1.8.8\bin [use semicolon to add existing PATH variable]
- ⮑ Set Environmental Variable (user):
- ⮑ Variable name : ANT_HOME Variable value : C:\apache-ant-1.8.8

6.3.5 Install PostgreSQL 8.4.2-1-windows.exe and Follow Instructions

- ⮑ Run PostgreSQL 8.4.2-1-windows.exe → Click Next
- ⮑ Now it will show the location C:\Program Files\PostgreSQL→Click Next
- ⮑ Now it will appear "C:\Program Files\PostgreSQL\8.2\data"→Click Next
- ⮑ Now an option will appear and you have to fill up
    - ♦ Password: iias123 (or as you wish)→Click Next
- ⮑ Port : 5432 (By default it will appear)→Click Next (3 times)→Finish

6.3.6 Database Creation for "Dspace" and Follow Instructions

- ⮑ Go to start menu→ Programs→ PostgreSQL→ PG Admin III
- ⮑ Open PostgreSQL Database Server 8.4 and click on Connect
- ⮑ Now enter the password "iias123" (or as you wish)→ Click Ok
- ⮑ Now right click at Role → Open "New login role"
- ⮑ Now fill up the required options
    - ♦ Username : dspace
    - ♦ Password : dspace

- ➲ Right click at Database➔ Open new database
  - ♦ Database Name: dspace
  - ♦ Owned by: dspace

6.3.7 Install Dspace 1.5.2-src-release.zip and follow instructions

- ➲ Unzip the file dspace-1.5.2-src-release.zip to "C:\"
- ➲ Edit the file "C:\dspace-1.5.2-src-release\dspace\config\dspace.cfg" and add the drive name "C :\DSpace". ➔ Save the file
  - ♦ i.e. : dspace.dir = C:\DSpace
- ➲ Create a folder "DSpace" in **"C:\"** derive
- ➲ Ensure the postgreSQL service is running
- ➲ For the generation of DSpace installation package, go to Start menu➔Run and type cmd and clidk OK.
- ➲ Type "cd C:\dspace-1.5.2-src-release\dspace"
  - ♦ Type "mvn package" and enter
  Note: If it will show "BUILD SUCCESSFUL" consider it, up to now you are ok.
- ➲ Automatically it will create a folder named as "target" in C:\dspace-1.5.2-src-release\dspace\
- ➲ Now type "cd C:\dspace-1.5.2-src-release\dspace\target\dspace-1.5.2-build.dir"
- ➲ Type "ant fresh_ install"
  Note: If your system shows "BUILD SUCCESSFUL" as seen in the screen that means you became success.
- ➲ Copy the web application directories (jspui,xmlui,oai) from C:/DSpace/webapp**s** and paste in C:/ Program Files\Apache Software Foundation\ tomcat6./webapps
- ➲ Now you have to run Tomcat, step is "C derive➔ Program Files➔ Apache Software Foundation➔ Tomcat 6.0➔ bin➔ Tomcat 6.exe"
- ➲ Open your favorite browser and type the URL http://localhost:8080/jspui

6.3.8 Create an Administrator Account

- ➲ Go to Start menu➔Run➔type "cmd" click ok
- ➲ Type C:\DSpace\bin\dsrun org.dspace.administer.CreateAdministrator
  Note: Now fill up required information; such as email address, account and password etc.
- ➲ Now finally you will see the DSpace home page. It will be shown as mentioned below:
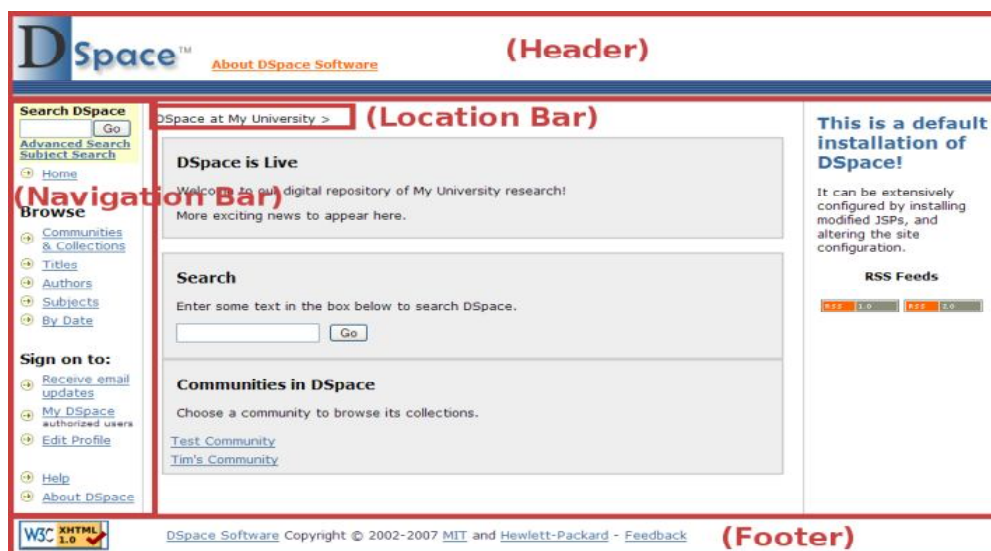
Figure 1: Homepage of DSpace

Above mentioned figure is the very first page of Dspace that become appear after the completion of installation. Important locations are being point out in this figure such as header, location bar, navigation bar and footer. From here actual work become start to publish the digitized documents. Before uploading the documents you should create communities and collections. IIAS library has created some communities and have uploaded the relevant documents. It will be better to show the further procedure of creating communities, uploading and publishing the documents etc. on the discussion of ongoing project of digitization program of IIAS library.

7.   Ongoing Project of IIAS Digital Library

In order to keep users interest (fellows, associates, research scholar), initially it was decided that the Digital Library would include born digital articles and rare documents. Rare Documents have been converted to digital format and it has been uploaded to Dspace collection on Intranet. In Dspace Metadata (data about data) describes each resource so it can be discovered and evaluated by the user. The IIAS Digital Library has developed a core set of metadata elements for the documents.

IIAS digital library has developed special communities and collections. Such as R. C. Majumdar collection, H. C. Roy Chaudhury collection, Tibetan manuscripts etc. These communities are being shown in Figure no- 3. To create communities and collections in Dspace is fundamental job to build up a digital library. How we have created a communities and collections for our digital library is being defined under step by step.

7.1   Practical Exercise: Create a Community

- ⮕   Launch your web browser
- ⮕   Navigate to the URL of your Dspace installation
- ⮕   Click on 'My Dspace'
- ⮕   Log in with the default Dspace administrator username and password
- ⮕   Select 'Collections & Communities' from the browse menu
- ⮕   Select 'Create Top-Level Community' from the Admin Tools menu
- ⮕   Fill in the metadata (Name, Short Description, Introductory Text)
- ⮕   Select 'Create'

7.2   Practical Exercise: Create a Collection

- ⮕   Select 'Collections & Communities' from the browse menu
- ⮕   Navigate into your newly created community
- ⮕   Select 'Create Collection' from the admin tools menu
- ⮕   Accept the default statements for describing the collection and click 'Next'
- ⮕   Fill in the metadata (Name, Short Description, Introductory Text) and click 'Next'
- ⮕   Click select 'E-people' and click on the default administrator user. Close the popup windows.
- ⮕   Select 'Next'
- ⮕   Select 'Update' to create you collection
- ⮕   Select 'Communities & Collections' from the browse menu to view your newly created collection and community.
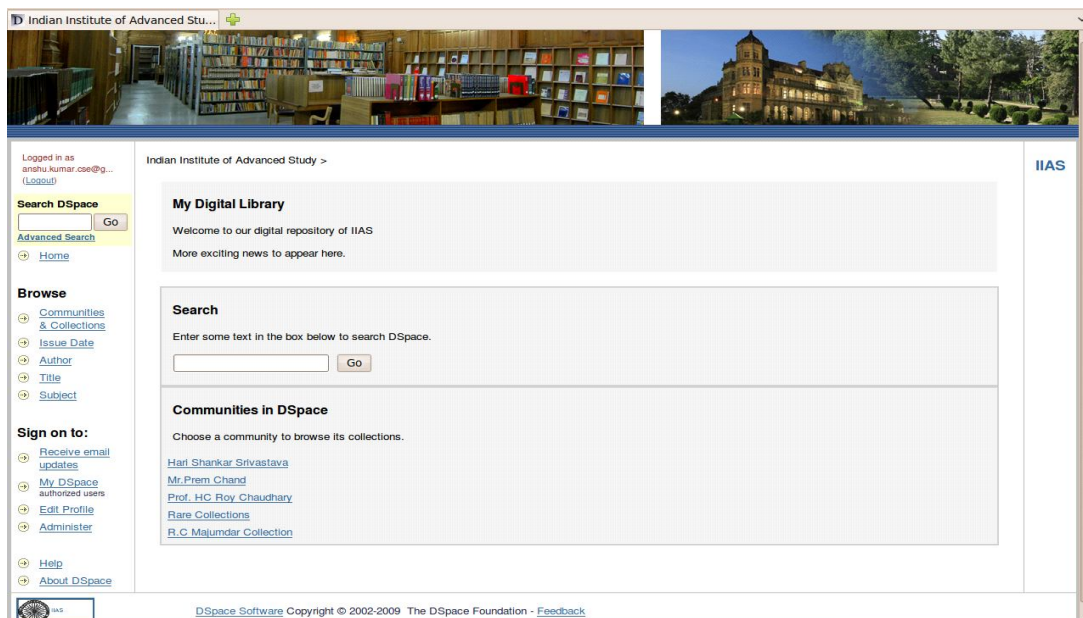

Figure. 2: Homepage of IIAS digital library

Above mentioned figure no. 2 is the homepage of IIAS digital library. Just a few weeks ago we have planned to develop our digital library. According to our project plan we have installed Dspace and have created a communities and collections. It is big project therefore up to now only born digitized documents have been uploaded. Now our further plan is to digitize our special and rare documents and upload it. After a few months IIAS digital library will be worldwide accessible to all.

Created communities and collections are being shown clearly in below mentioned figure no. 3. Dspace arrange automatically all communities in alphabetical order. I n figure no. 3 some communities are being covered such as Hari Shankar Shrivastava collections, Prem Chand collections, H. C. Roy Chaudhury collections, Rare collections, R. C. Majumdar collections etc. It is being highlighted in figure no. 3 that we made available Persian manuscripts, Punjabi collectins, Tibetan collections and Vinod Sena collection in IIAS digital library.

Figure. 3: A list of special collections of IIAS digital library

8. Further Planning

IIAS Library has planned to maintain Digital Archive of good collection of Social Science and humanities articles, Audios, Videos and scanned rare documents. IIAS Library needs a good quality of infrastructure like:

- ➲ Good Quality of Scanner with Optical Character Recognition Software
- ➲ Server
- ➲ Hard Disk
- ➲ Computer

9. Conclusion

Digital Libraries of today should be in a position to provide the readers about all the literature available on the subject of interest, from where it can be obtained and retrieved in appropriate time. Digital libraries/repositories have the potential to store much more scholarly information and require very little space to contain it. IIAS Digital Library has played a major role in delivering the contents efficiently and effectively to the users through Intranet. In IIAS Digital Library users have the option to view the full text of the news item by date, title, and keywords etc.

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