# Design, Development and Validation of Open Source Platform for AIISH

Digital Repository and Online Public Access Catalogue

A Non-funded Research Report

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2021

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#### SUMMARY

#### Project Summary

The All India Institute of Speech and Hearing is one of the early implementers of the Institutional Repository (IR) and Integrated Library Management System (ILMS) among the higher educational Institutions in the country. However, both the solutions were developed on proprietary software platforms with limited functionalities and are being continued even today without any further modification or addition of features. On the other hand, the IR and ILMS fields at present are dominated by freely available open source applications with advanced features and functionalities. This project designed and developed an open source-based IR and Online Public Access Catalogue, the end-user component of the ILMS. The new platform serves as a single-point access to all the resources and services of the Library and Information Centre, All India Institute of Speech and Hearing, Mysuru.

#### Acknowledgements

We sincerely acknowledge Dr. M. Pushpavathi, Director, All India Institute of Speech and Hearing, Mysore for her encouragement and support towards the completion of the project. We are grateful to Dr. S.R. Savithri, former Director for sanctioning the project and we thank her for her confidence in us. Thanks are also due to Mr. Mahendra, Clerical Assistant, Ms. Bhanumathi, Clerical Assistant and all our colleagues in the Library and Information Centre, AIISH, Mysore.

Investigators

#### Chapter 1

# INTRODUCTION

Institutional Repository (IR) also known as digital repository or digital library is a solution for gathering, preserving and disseminating intellectual output of an educational and research organization, and Online Public Access Catalogue (OPAC) is a tool for preserving and retrieving the bibliographic elements of its collection of information resources. The availability of user-friendly Open-Source Software applications, i.e. the applications with their source codes open for inspection, modification, and improvement by adding features to them, and increase in the I.T. literate information user community have made IRs and OPACs a common place in educational institutions across the world.

#### 1.1. Institutional Repository: Concept, Definition and Content Types

Lynch (2003) defined an institutional repository as a "set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members". According to Swan, they are "digital collections of the outputs created within a university or research institution". The IRs are built on a set of global technical standards which make them 'interoperable'. These standards are known as Open Access Initiative-Protocol for Metadata Harvesting or OAI-PMH, in short. Earlier, the IRs were considered as online channels for the dissemination of 'grey literature', the unpublished theses, dissertations, term papers, presentations etc. of an organization which are typically not available or accessible for the scholarly community outside the organization. However, the recent trend is to promote IRs as and other open access repositories as primary channels of scholarly communication, and thus reduce the monopoly of commercial journal publishers in the scholarly world.

Any scholarly piece of information, generated at an Institutional level is qualified to incorporate in the Institutional repository. In general, IRs have the following types of resources.

- a. Theses
- b. Dissertations
- c. Conference papers
- d. Conference Presentations
- e. Teaching notes
- f. Class presentations
- g. Peer-reviewed journal articles or pre-prints
- h. Research datasets
- i. Books and Monographs

1.2 Advantages of Institutional Repository

The major advantages and benefits of establishing an Institutional Repository are the following.

- a. Dissemination of scholarly output of the organization to a wider audience
- b. Increase in the citation to the research works
- c. Showcasing of the scholarly performance of the organization
- d. Long-term preservation of the scholarly content
- e. Opening of opportunities for collaborative and inter-disciplinary research
- 1.3 Online Public Access Catalogue: Concept and Definition

The Online Public Access Catalogue or OPAC in abbreviation, is the computerized version of traditional library catalogue. Typically, OPAC functions as a subsystem or module of a software package known as Integrated Library Management System (ILMS) or Integrated Library System (ILS) which is used for managing the entire library operations and services.

### 1.4 Advantages of the Online Public Access Catalogue

The advantages of using OPAC include:

- a. Enhancement in the way of searching and identifying the needed information
- b. Elimination of paper cards
- c. Simultaneous access to multiple users
- d. Saving of physical storage space
- e. Ease of up-dation
- 1.5 Current International and National Status of IRs and OPACs

There has been a proliferation in the number of IRs and OPACs both internationally and nationally in the last few years with the emergence of Open Source Software solutions in the field. According to the Ranking Web of Repositories (2016), totally there are 2297 no. of IRs all over the world and in India there are 43 repositories. These repositories differ greatly in content, size, scope and objectives and majority of the IRs operating in India are open source based (Gohain 2011). Two active national repositories in India at present are Shodhganaga, a repository of Indian doctoral theses and Shodhagangotri, a repository of Indian doctoral research in progress, both developed by the INFLIBNET, a constituent of UGC, Govt. of India. The National Digital Library is a new repository from India developed at the IIT, Kharagpur as a part of the National Mission on Education through Information and Communication Technology of the Ministry of Human Resource Development, Govt. of India.

### 1.6 Statement of the Problem

All India Institute of Speech and Hearing (AIISH), the premier institution in the country in the field of communication disorders established in the year 1965. The Institute functions under the Ministry of Health and Family Welfare, Government of India. The Library and Information Centre of the All-India Institute of Speech and Hearing, Mysore, has been in existence since the establishment of the Institute on 9th August 1965. It is rich in print and electronic information resources and provides a number of traditional

and electronic information services. The library is running an Institutional repository of theses and dissertations. Also, all its operations have been automated using an Integrated Library management System with an OPAC module. Both the applications were developed by third party using proprietary software tools. Presently, the repository contains more than 1700 records consisting of postgraduate and doctoral dissertations, and the funded research project reports. The OPAC contains the bibliographic records of 20,000 plus print collection of the Institute library. Both the IR and OPAC are being maintained on payment basis by the third parties who developed them. Our working experience with the applications and the feedback we have been receiving from our user community strongly suggest a thorough modification in the functionalities and upgradation of both the digital repository and OPAC. However, upgradation and modification processes require additional expenses from the part of the Institute as the applications are running on proprietary software developed by third parties and getting it done by making payment is not feasible considering the fact that the upgradation may be needed frequently. On the other hand, there are plenty of free open-source applications for building digital repository and OPAC with advanced features and functionalities. Upgradation is also free on this software. Hence, this project proposes to design and develop an open-source platform for the digital repository and OPAC and migration of the existing digital repository collection and the OPAC bibliographic records to the new system.

1.7 Objectives of the Study

The objectives of the project are the following.

- 1. To systematically evaluate and summarize the drawbacks of the existing IR and OPAC of AIISH.
- 2. To identify suitable open-source software alternatives for the existing IR and OPAC.
- 3. To design and develop an open source platform and migration of the resources

- 4. To expand and enrich the content base of the repository by additionally incorporating new material types
- 5. To facilitate content based searching of digital repository and discoverability on search engines.
- 6. To generate a new comprehensive set of metadata for the IR and OPAC as per the international standards
- 7. To facilitate interoperability for the IR with the related institutional and national repositories across the world.
- 1.8 Importance of the Present Project

A review of the current international and national status of the subject reveals the importance of developing Institutional Repositories. Also, majority of the repositories that have been developed in India are on open source platform and they have a lot of features and functionalities such as content based searching, e-mail alerts, interoperability with other IRs, web search engine discoverability, etc. which AIISH digital repository does not have. Hence, it is imperative to develop a repository for the Institute on open source platform for the benefit of its user community.

### 1.9 Work Plan

- 1.9.1 Materials and Methods
  - I. Analysis of the existing Digital Repository and OPAC

The present system of digital repository and OPAC will be analyzed to identify its strength and weakness by the following methods.

- a. Conducting an evaluation survey among the end users on their usability.
- b. Testing and evaluation of the system against a check list developed by the project team
- II. Selection of Open-Source Software

The available Open-Source Software for building digital repository and OPAC will be identified by conducting a literature survey in the field of digital information management. The other associated open-source software applications needed for developing the system namely, MySQL, PHP, Apache and Tomcat will also be downloaded and installed.

#### III. System Design and Development

Based on the analysis, a new system will be designed, taking into consideration of the limitations of the existing system and the need for incorporating new resources with additional features and functionalities. The software applications selected will be integrated, customized, modified and additional features will be incorporated by writing necessary codes/ programmes. MySQL based databases will be set up and necessary configurations will be made on other software applications. Also, web based interfaces will be designed and developed for both the repository and OPAC.

#### IV. Rectification of the OPAC Records

In order to ensure accuracy of information and improve the OPAC based search results, the existing bibliographic records of the print collection (more than 20,000) will be completely replaced by importing the corresponding Machine Readable Catalogue (MARC) records from the official website of the Library of Congress, USA (Library of Congress, n.d.) available for free downloading as a part of its Cataloging in Publication programme. The records which are not available with the Library of Congress will be created manually.

#### V. Metadata Creation

Metadata are the elements for describing information resources in a collection. In order to index and describe the resources included in both the Digital Repository and OPAC, appropriate metadata will be created from the Dublin Core Metadata Set, an international standard for information resource description developed by Dublin Core Metadata Initiative (DCMI), a non-profit organization and ratified as ISO 15836:2009, ANSI/NISO Z39.85-2007, and IETF RFC 5013 (DCMI n.d.). Metadata such as contributor, coverage, description, year of publication, format, publisher, subject, title, ISBN, accession number and location will be considered for inclusion.

## VI. Uploading of the Materials

All the materials will be uploaded to the new system developed by assigning suitable metadata elements selected. Wherever possible bulk uploading will be done by writing necessary scripts in PHP language.

VII. Trial Running, Error Rectification and Finalization of the System

Trial running will be carried out after development of the system. Then, errors, if any will be rectified and the system will be finalized.

### Chapter 2

# Evaluation of the Existing System

The existing AIISH Institutional Repository and the Online Public Access Catalogue were evaluated by conducting a questionnaire survey among the end user community. The details are explained in this chapter.

#### 2.1 Evaluation of the OPAC

An eight-item questionnaire was developed for collecting the opinion of the Online Public Access Catalogue by the end users at the Institute (Appendix-1). Totally, 50 questionnaires were distributed and 30 users (60%) responded to the survey.

The respondents include 11 staff and 19 students. Among the respondents, 21 had been with the Institute for more than three years and nine joined the Institute in less than a year. The respondents were screened initially based on whether they use OPAC or not. The non-users were requested to return the questionnaire after indicating the reasons for not using the facility. Further questions were limited to those were using the OPAC.

Only two respondents (6.6%) did not use the Online Public Access Catalogue. The reasons cited for non-use include 'I don't know the benefit of using OPAC' and 'I prefer searching the books directly on the shelves',

The questionnaire received from the remaining 28 respondents were further analysed for understanding their pattern of use, difficulties faced and suggestions for features in the new OPAC.

The respondents came to know about the OPAC facility from 'colleagues and friends' (32%, 9 no.), library staff (57%, 16 nos.), library website (18%, 5 nos.), teachers in the class (3 nos., 11%), and library orientation (64%, 18 nos.). Thus the majority came to know about the facility through the library orientation programme.

To a question on the functionalities of OPAC that were being used, the respondents indicated book author searching, searching (17 nos, 60%), title searching (21 nos., 75%), keyword searching (13 nos., 46%), location (26, 93%), no. of copies of books (9 nos.,

32%), new arrivals (2 nos., 7%). No one used the facility for book reservation and for checking outstanding due.

Fifteen respondents (54%) used OPAC on weekly basis and the remaining 46% used it rarely.

The respondents faced difficulties in using OPAC and book circulation. These include missing the due date of book return (10 nos., 36%), lack of information on the total fine due (11 nos., 39%), unskilled in OPAC searching (2 nos., 7%), lack of information on new arrivals (7 nos., 25%), inadequacy in the no. of books issued (7 nos., 25%), and inconvenient book circulation timing (2 nos., 7%).

The respondents suggested features and functionalities for the new OPAC such as user review on books (11 nos. 39%), international database search facility (7 nos., 25%), common search interface for all the library resources (17 nos., 61%), feedback (4 nos., 14%), table of contents (20 nos., 71%), and book suggestion facility (15 nos., 54%).

#### 2.2 Evaluation of the Institutional Repository

A 16-item questionnaire was developed for collecting the feedback on existing IR from the end-user community. (Appendix-II). Totally, 50 questionnaires were distributed and 31 persons (62%) responded to the survey. 17 respondents (55%) had been with the organization for more than five years. Seven (23%) had three to five years' experience and the remaining seven respondents (23%) joined the Institute in less than three years. Four out of 31 respondents never used the IR. The reasons include, 'It is not relevant for my information needs' (50%, 2 nos.), and 'I don't know how to use it' (50%, 2 nos.).

The questionnaire received from the 27 respondents, who were the users of the IR, were further analysed for understanding their pattern of use, views on different aspects of Institutional repository, difficulties faced and suggestions for functionalities and features in the new OPAC.

Majority of the respondents (63%, 17 nos.) came to know about the repository through the library orientation programme. Other sources of information about the IR were,

colleagues and friends (48%, 13 nos.), teachers in the classroom (30%, 8 nos.), and library website (22%, 6 nos.).

In an attempt to find out the awareness of the resources available in IR, the respondents were requested to identify the resources from among a list. The list included items which were not available in the repository. Only 37% (10 nos.) of the respondents were able to tick the correct combination of resources in the repository.

Of the four types of resources content, the PG dissertations were used frequently or very frequently by majority of respondents (59%, 16 nos.). This is followed by doctoral theses which were used frequently or very frequently by 37% (10 nos.). Only 22% (6 nos.) used the Independent Project reports very frequently or frequently. A considerable number of end-user respondents (37%, 10 nos.) never used the Independent Project reports.

Another awareness question was asked regarding the nature of accessibility to the repository. Only 19% of the respondents answered the correct combination of repository accessibility options.

Majority of the respondents (78%, 21 nos.) did not use any repository other than AIISH Institutional repository. The major reasons for not using other repositories were 'Didn't find any other useful repository' (37 %, 10 nos.) and 'Need did not arise' (41%, 11 nos.). The respondents who reported as using other repositories (22%, 6 nos.) were asked to name them. However, the names they entered were not actually repositories.

The level of satisfaction of the respondents with regard to 12 functionalities and features of the repository was measured on a five-point scale. Of these, 52% (14 nos.) reported dissatisfaction on the content types of the repository. 22% (6 nos.) were satisfied and the remaining 26% (7 nos.) stood neutral.

48% (13 nos.) were satisfied with the *content quantity* whereas 22% (6 nos.) were dissatisfied. The *search and retrieval* ability of the repository was dissatisfying for 67% of the respondents. Only 11% (3 nos.) were satisfied on this aspect. A huge 85% were dissatisfied with the *navigation* facility of the repository. However, 55% (15 nos.) expressed satisfaction on the *content up-dation* of the repository. 81% expressed

satisfaction on *open accessibility* of the repository content and as well as *content accuracy.* 70 % were not satisfied with the *look and feel* of the repository. A huge majority (93%) reported that the repository had useful content. 53% are satisfied with the readability of the content. Only 15% (4 nos.) were satisfied with the speed of access and 7% with the username and password-based access.

The end-users were asked a question on their knowledge of the copyright ownership of the content and answers of 67% were wrong.

To an open-ended question on additional resources, they wish to access in the repository, the respondents suggested publications and presentations.

The respondents indicated additional features like ability to download the full-text content (78%), more types of content (59%), display of most popular/ most retrieved items (56%), E-alert on new deposit (52%), feedback mechanism (48%), peer-reviewing (41%), facility for self-deposit (33%), and availability of research datasets (33%). 67% (18 nos.) reported difficulties in using the repository. These include access interruption, more downloading time, issue with the flash player, username and password based access and limited search facility.

To a question on the perceived benefits of making the research works available in IR, all the respondents reported enhancement of citation, getting protection for the work from plagiarism (93%), easy communication of research results (85%), long-term preservation (18%), easy identification of works by others (14%), making the research available with very little effort on the part of contributor (20%), making the research available faster than the traditional publishing process (41%), improve the quality of research work in the field (40%) and enhancement of quality of teaching-learning process (63%).

The major concerns of the respondents in contributing their research work to a repository are, repositories in general have low prestige(15%), repositories in general are harmful to research rather than helpful (12%), others might copy the work without my permission (48%), by depositing the work in the repository I may not be able to publish it elsewhere (60%) and there is no motivation and incentives for contributing to the repository (64%).

## 2.3 Inferences

# Online Public Access Catalogue

- The end users are not using all the features and functionalities of the existing OPAC.
- The usage rate of OPAC is fairly good. The users are facing issues related to book circulation. The major ones are the missing of due date and fine accrued due to late return.
- Though the OPAC is listing newly arrived books, the users demanded new arrivals functionality in the new OPAC. Probably, the new arrival section of the existing OPAC is not getting enough visibility.
- The major functionalities required in new OPAC are book review, link to international databses, common search interfaces for all the resources, table of contents of books, feedback system and suggestion for new books.

# Digital Repository

- Though a minority, there are end-users who are not using the existing repository due to the lack of skills.
- The library orientation programmes played a major role in inducting skills on using the repository. Also, a considerable number of respondents learned to use IR from their colleagues.
- The End-users are not fully aware of all types of resources available with the repository.
- Post graduate dissertations are the most frequently used repository type.
- Surprisingly, only less number of end-users are aware of the fact that the repository content are fully accessible from across the world free of cost.
- All the respondents participated in the survey were using only AlISH Institutional Repository. No other IR is as useful as AlISH IR for the respondents.
- Though the respondents were not fully aware of the types of the repository content, they expressed dissatisfaction about the content types which is contradictory.

- A considerable no. of respondents was not happy with the quantity of the content also.
- The respondents required improved search/ retrieval and navigation facility for the repository. Also, they were not happy with the look and feel of the repository. However, they were satisfied with the content updating, content accuracy and open accessibility to the content. Slightly more than half of the respondents were who satisfied with the readability of the repository.
- Access speed of the repository much to be improved. Also, the respondents were not happy with the user-name and password based access to the repository.
- The end-users had little knowledge about the ownership and copyright of the repository content.
- The respondents demanded faculty publications and presentation in the repository.
- The additional functionality required for the repository include full-text downloading, additional content types, display of popular or most viewed items, e-alert, self-depositing and research data set.
- The respondents were well aware of the benefits of depositing their research materials in the repository. However, they were concerned whether they could publish their work elsewhere if they deposit them in the repository. Also, they were less motivated as there is no incentives in depositing content to the repository.

# Chapter 3

# Software Selection and Installation

The aim of the project was to develop a new Institutional Repository and Online Public Access Catalogue for the Institute using open-source framework. This chapter details the selection and installation of suitable software applications and supporting tools for developing IR and OPAC.

3.1 Selection and Installation of Institutional Repository Software

### 3.1.1 Selection of Institutional Repository Software

The specific repository software was selected from the Directory of Open Access Repositories (Open DOAR), a global directory of open access repositories started in 2005. It is a collaborative project of the University of Nottingham and Lund University, funded by Open Society Institute (OSI), Joint Information Systems Committee (JISC), SPARC Europe and Scholarly Publishing and Academic Resources Coalition and CURL. As of June 2021, the directory listed 5608 repositories worldwide, including subject repositories and institutional repositories. Of these, 2234 repositories were built on the open-source software called D-Space, followed by E-Prints (616 nos.). The complete list of software-wise list of repositories as per the Open DOAR is given in Table 1.

#### Table 1

SI. No.	Repository Software	Number of Installation
1	DSpace	2234
2	EPrints	616
3	WEKO	532
4	Digital Commons	296
5	Islandora	145
6	CONTENTdm	100
7	OPUS	87
8	HAL	75
9	dLibra	64

### Repository Software-wise list of OpenDOAR

10	Fedora	63
11	PURE	57
12	Greenstone	51
13	Drupal	36
14	Invenio	28
15	Earmas	24
16	Digibib	23
17	Wildfire	22
18	SciELO	19
19	Diva-Portal	19
20	VITAL	15
21	DigiTool	15
22	MyCoRe	13
23	Omeka	12
24	Fez	9
25	XooNIps	7
26	Cybertesis	6
27	Equella	6
28	Open Repository	6
29	Others	1072
Total		5652

The DSpace, the most heavily used application, was selected for developing the opensource based IR of AIISH. It was decided to use the latest available version of the DSpace for Windows.

## Supporting Tools

The supporting applications and tools were also finalized as given below.

a. Java jdk -version 8

- b. Tomcat-version 9
- c. Apache maven- version 3.6.3
- d. Apache Ant version 1.9.15
- e. Postgresql version 9.6 and pgAdmin

# Hardware Infrastructure

The selected applications were deployed on the server of the Library and Information Centre, AIISH having the following hardware infrastructure.

- 1. Processor: Intel(R) Xeon(R) Gold 6152 CPU @2.10GHz
- 2. RAM: 64 GB
- 3. System type: 64 bit, x64-based processor
- 4. Storage: 8 TB
- 5. Operating system: Linux/Ubuntu 18.04 LTS; Windows Server 2016

# 3.1.2 Installation of Institutional Repository Software

- 1. Downloaded Apache Ant and Maven copied to the folders created in the server computer as 'Apache Ant' and 'Apache Maven'
- 2. Environmental variables were set up for JAVA, Ant and Maven and checked its functioning.
- 3. PostreSQL was installed by creating a path, providing a service name account name password, port no., eabling procedural language and contrib modules
- 4. pgAdmin was started and database was connected by right clicking PostgreSQL.
- 5. A login role was added for the DSpace and created a database by name 'dspace'
- 6. Following the installation of PostgreSQL, Apache Tomcat was installed by choosing the installer location, connector port, admin user name and password, and selecting the path of the Java virtual machine on the system.
- The DSpace software for Windows was downloaded from the official website of the software at <u>www.duraspace.org/dspace/download</u>
- 8. The downloaded software was extracted to a directory created as 'dspace'

9. Started PostgreSQL server and in the command line entered 'dspace' directory and ran maven by entering 'maven package'

By following the above procedures the DSpace software was successfully installed.

### 3.2 Installation of Koha Software

The Koha software was installed on Debian Linux operating system as explained below.

- The latest version of Koha was installed by entering the following commands "sudo apt install -y koha-common"
- Next, the domain name and port numbers were edited. The port number of Koha was given as 8080 using the command "INTRAPORT="8080"
- This is followed by the installation of MariaDB Server by entering the command" sudo apt install -y mariadb-server"
- 4. A root password was assigned for the MariaDB by following the command " sudo mysqladmin -u root password "
- 5. A Koha instance was created by applying the following commands " "sudo a2enmod rewrite" "sudo a2enmod cgi" and "sudo service apache2 restart" followed by "sudo koha-create --create-db library"
- The port 8080 was assigned to Koha staff client and 80 for the OPAC. The new port was added to the Apache by following "sudo mousepad /etc/apache2/ports.conf"
- 7. The initial parameters such as branch, item, super user etc. are created and restarted Memcached service and opened Koha web installer.
- 8. The Koha staff client was opened and set up the library.

# Chapter 4

# System Design and Development

The new Online Public Access Catalogue and Institutional Repository were designed and developed based on the need analysis and feedback obtained from the end-users of the existing systems. In addition, the project team members who have been managing the existing AIISH Institutional Repository and OPAC evaluated them using a check list developed based on a review of literature.

4.1 Design and Development of Online Public Access Catalogue

The Online Public Access Catalogue was designed on Koha, an internationally reputed Integrated Library Management System. The whole library and information centre website was redesigned over the OPAC module of the Koha software.

4.1.1 Resource Types

The entire library resources were categorized under the following collections and made available for searching through OPAC.

- 1. ARF project reports
- 2. Book CD-ROMs
- 3. Damaged books
- 4. E-books
- 5. Extramural Funded Project Reports
- 6. Kannada books
- 7. Literature books
- 8. PG dissertations
- 9. PhD thesis
- 10. Reference books
- 11. Reference textbooks
- 12. Stack textbooks
- 13. Standards
- 14. Written off books

### 4.1.2 Creation of Administrator Account

An admin account was created for managing the entire operations of the Integrated Library

Management. The admin homepage is given in figure 1.

Circulation Patrons Search - TR Cart More - Enter patron card number or partial nan		Ilbadmin   All India Institute of Speech and Hearing ~ Help
	Press F11 to exit full screen Search patrons Search the catalog	
Home		
		Cataloging
	am Patrons	E Serials
	Q Advanced search	Acquisitions
	E Lists	Reports
	& Authorities	Tools کر
		Koha administration
		About Koha

Figure 1: Admin Home Page

### 4.1.3 Adding of Z39.50 Servers

Z39.50 is network protocol for searching and retrieving bibliographic records from the remote databases. Majority of the books in the library are international publications and the Koha software has an option for connecting to Z39.50 Servers for downloading bibliographic details of the books. This will save a lot of time from manually entering the bibliographic information of each book in the database. Hence, setup was made to retrieve data from Z39.50 Servers (Figure 2).

Circulation Patrons Search	- ₩ Cart More -							libade	nin   All India	Institute of S	speech and Heari	ng + Help
239.50	SRU server search:											
JKONA			Search									
Se	arch Z39.50/SRU servers Check out Search t	ne catalog										
nome ( Administration ) 239.50/SRU ser	rers											
System preferences	A New 710 50 server											
<ul> <li>System preferences</li> </ul>	• Her 250 50 50 101											
Basic parameters	Z39.50/SRU servers administratio	n										
Libraries												
Library groups	Showing 1 to 5 of 5 Show 20 V entries < 1	irst	Lost >	Search:		X Clear	filter					
Item types												
<ul> <li>Authorized values</li> </ul>	Target	<ul> <li>Hostname/Port 0</li> </ul>	Database	Userid	Password	Preselected 0	Rank o	Syntax	Encoding	Timeout	Record type	
Patrons and circulation	BRITISH LIBRARY	z3950cat.bl.uk:9909	BNB03U			Yes	1	USMARC	utf8	0	Bibliographic	Actions +
Patron categories												
<ul> <li>Circulation and fines rules</li> </ul>	LIBRARY OF CONGRESS	bx2.loc.gov:210	LCDB			Yes	1	USMARC	uera	0	Bibliographic	Actions +
<ul> <li>Patron attribute types</li> </ul>	LIBRARY OF CONGRESS NAMES	bx2.loc.gov:210	NAF			Yes	1	USMARC	utf8	0	Authority	Actions w
Library transfer limits												
> Transport cost matrix	LIBRARY OF CONGRESS SRU	bt2.loc.gov:210	LCDB			Yes	1	USMARC	utf8	0	Bibliographic	Actions -
Cities and towns	LIBRARY OF CONGRESS SUBJECTS	b/2 loc gay:210	SAF			Yes	2	USMARC	utto	0	Authority	Actions
Accounting												mana -
- Debit times	Showing the 5 of 5 or First C. Provinces	Next > Last >										
Catalog												
MARC biblescable framework												
Koha ta MARC manning												
MARC bibliographic framework test												
Authority types												
<ul> <li>Classification sources</li> </ul>												
<ul> <li>Record matching rules</li> </ul>												
<ul> <li>OAI sets configuration</li> </ul>												
Item search fields												
Acquisition parameters												
<ul> <li>Currencies and exchange rates</li> </ul>												
<ul> <li>Budgets</li> </ul>												
> Funds												
<ul> <li>EDI accounts</li> </ul>												
Library EANs												

Figure 2: Z39.50 Servers

## 4.1.4 Creating Item Types

The item types for all the 14 types of resources mentioned above were created in the software (Figure 3)

Circulation Patrons Search	- HC	art Mc	ire -								libadmin   All	India Institute	of Speech and He	saring - Help
Alaba System	preforence sear	ch:												
JKOna						Search								
Sear	rch system pre	ferences	Check out Search	the catalog										
tome - Administration - Rem types adminis	stration													
System preferences - System preferences	+ New	tem type	]											
Basic parameters	Item ty	pes ad	ministration											
- Libraries														
Library groups     Item types	Showing 11	o 10 of 24	Show 10 👻 entries	< First	us Next	+ Last	Beardto			34 Clear filter O Co	Numns 📥 Export			
<ul> <li>Authorized values</li> </ul>	Image +	Code +	Description	Search .	Not for +	Hide in .	Rental +	Daily rental +	Hourly	• Default	Processing fee (when *	Checkin .	Library +	Actions
Patrons and circulation				category	loan	OFAC	cnarge	charge	charge	cost	lost)	message	inmations	
Circulation and fines rules		ARF	ARF reports				0.00	0.00	0.00	0.00	0.00		Nolimitation	2 Edit Delete
Patron attribute types	-9	VM	Book CD - Roms		Yes					0.00	0.00		No limitation	
<ul> <li>Library transfer limits</li> </ul>	0													(a
Transport cost matrix		BK	Books				0.00	0.00	0.00	0.00	0.00		No limitation	and the second
Cities and towns	Laka													( s con) ( s conn.
Accounting		DM.	Demaged books				0.00	0.00	0.00	0.00	0.00		No limitation	ADD BOMM
Dobt types														
Catalog	6	EB	E-Books				0.00	.0.00	0.00	0.00	0.00		No limitation	PEdt B Delete
MARC bibliographic framework Koha te MARC mapping		EJ	e-Journals		Yes					0.00	0.00		No limitation	P Ddl B Defete
MARC bibliographic framework test Authority types		EXT	Extramural research reports				0.00	0.00	0.00	0.00	0.00		No limitation	2 Dat Delete
Classification sources Record matching rules		FSP	Faculty & Staff Publications				0.00	0.00	0.00	0.00	0.00		No limitation	For Delete
OAI sets configuration Item search fields		FBAC	Faculty Book Article/Chapter				0.00	0.00	0.00	0.00	0.00		No limitation	≠ E.ot
cquisition parameters Currencies and exchange rates		FCPP	Faculty Conference Paper Presentation				0.00	0.00	0.00	0.00	0.00		No limitation	Fint Develo
Budgets Funds	Showing 11	e 10 of 24	« First » Previous	Next > Last										
Linear EANs														

### Figure 3: Creation of Item Types

### 4.1.5 Adding Marc Records

The Marc records were added for each type of item types to standardise the data entry (Figure 4).

on Patrons S taloging > Add MARC m	earch - TR Cart More	•							libadm	in   All Indi	a Institute	of Speech an	nd Hearing +	He
Add N	IARC record													
E Sav	e v Q. 239.50/BRU search e	Gattings - Cancel												
	0 1	2	3		4	5	6	7				9		
210 222	240 243 245 246 246 247	250 260 264 270												
Sectio	n 2													
210 ?	- ABBREWATED TITLE 🐀 🦡													
222 ?	- KEY TITLE va 👒													
240 ?	- UNIFORM TITLE 👒													
243 ?	COLLECTIVE UNIFORM TITLE	*												
245 7 0	0 - TITLE STATEMENT -													
- 6	Linkage	880-01												
~ ª	Title	21-segi Han'guk yöng	hwa :							Required				
÷ D	Remainder of title	welmeidű yönghwa es	ö K-sinema ro											
- C	Statement of responsibility, etc.	Kim Hyöng-sök [and s	even others];	Han'guk Yör	ngsang Charyov	ön yökküm.								
- h	Medium													
246 ? 3	- VARYING FORM OF TITLE -													
- 6	Linkage	880-02												
- ª	Title properishort title	Isip-ilsegi Han'guk yör	ighwa											
246 ? 3	0 - VARYING FORM OF TITLE -													
_ 6	Linkage	880-03												
~ *	Title properishort title	Han'guk yönghwa												
247 ?	- FORMER TITLE 🗠 👒													
250 2	- EDITION STATEMENT IS IN													
. 6	Linkage	880-04												

Figure 4: Adding Marc Records

## 4.1.6 Cataloguing Items

Bibliographic details of each book in the library were tried to fetch from the Z39.50 servers automatically. Mainly the Library of Congress Server was used for this purpose. (Figure 5).

Z39.50/8RU se	earch	
1 beam		Bearch targets
1 K KN		D BRATCH LINEARY
Title:		LIBRARY OF CONGRESS
Authors		E CHORT OF CONCRESS SHO
Subject heading:		
Reyword (anys:		
LC call number:		
Control no.:		
Deweys		
Standard ID:		
Clear search torm		
Search Cancel		

Figure 5: Fetching bibliographic details from Z39.50 server

4.1.7 Importing and Assigning Accession number

Each record was imported to our database (Figure 6) and assigned a unique accession number followed by location / rack number (Figure 7)

Results You searched for: Title: Covid									
Showing 1 to 40 of 40 Search: 36 Clea	filter 🔷 Column	s 📥 Export							
	Server +	Title -	Author 4	Date +	Edition +	ISBN	+ LCCN +	Actions +	
	LIBRARY OF CONGRESS SRU	#noirestiamoacasa :				9788857569642	2019428609	Actions -	
	LIBRARY OF CONGRESS	#noirestiamoacasa :				9788857569642	2019428609	Actions +	
	LIBRARY OF CONGRESS SRU	2020 elections :				9781536185645   1536185647	2020301730	Actions w	
	LIBRARY OF CONGRESS SRU	21-segi Han'guk yönghwa :			Ch'op'an.	9791190901109	2020461971	Actions w	
	LIBRARY OF CONGRESS SRU	32 virtual, augmented, and mixed reality programs for libraries /				9780838949481	2021004662	Carc	RC preview 5 preview
	LIBRARY OF CONGRESS SRU	4 articles portant sur COVID-19 au Sénégal					2020336651	Actions +	
	LIBRARY OF CONGRESS SRU	Accessing the economic impact of COVID-19 and policy repenses in Sub- Saharan Africa /				9781464845683	2020384284	Actions w	
	LIBRARY OF CONGRESS SRU	Ada cerita hebat di balik Covid-19 /			Cetakan I.	9786239379100	2021305128	Actions w	
	LIBRARY OF CONGRESS SRU	Addressing the social and economic impact of the COVID-19 pandemic.					2020308505	dations w	
	LIBRARY OF CONGRESS SRU	After Covid-19 :				9781925229592	2020416274	Actions +	
	LIBRARY OF CONGRESS SRU	Afutā korona jidal no Bei-Chū kankei to sekai chītsujo =			Shohan.	9784130333016   4130333011	2020453113	Addons w	
168.102.47.8080/cgi-bin/koha/cataloguing/z3950_search.pl#	LIBRARY OF CONGRESS	Albania :	Mella, Thomas O.	1991			92184504	Astons w	



Cataloging search Ct	reck out Check in Renew Search t	the catalog
Home > Cataloging > Edit 21-segi Han'guk yönghwa : (Record #	15172) > Berns	
Items for 21-segi Han'guk yõnghwa	(Record #18172)	
Normal		
MARC 0 - Withdrawn s	euteb	
2 - Source of cl	assification or shelving scheme	Dowey Decinal Classification x +
3 - Materials sp	ecified (bound volume or other part)	
Hems 4 - Damaged st	atus	
Holds (0) 5 - Use restricts	ons	*
Checkout history 7 - Not for loan		*
Modification log 8 - Collection o	ode	1/1 w *
a - Permanent I	ocation	All india institute of Speech and Hearing v
b - Current loca	dion	At India Institute of Speech and Hearing
c - Shelving loc	ation	
d - Date acquire	M (	
e - Source of ac	quisition	
f - Coded local	on qualifier	
g - Cost, norma	i purchase price	
h - Serial Enum	eration / chronology	
j - Shelving cor	droi number	
e - Full call num	ideer .	
p - Harton	L. L	
t - Copy numbe	e l	
u - Onitomi Net		
w. Price effect	in from	
x - Non-public r	vote	

Figure 7: location / rack number

4.1.8 Manual Cataloguing

The resources for which we could not retrieve bibliographic details from the Z 39.50 servers were carried out manually (Figure 8).



Figure 8: Manual cataloguing

4.1.9 Creation of Patron categories

Based on the types of library users, patron categories were created on the database. These were students, assistant professor, associate professor, professor and technical staff (Figure 9).

Circulation Publish Search	* 🐨 Cart	More -									libedmin   All In	dia institute of 5	seech and He	aning - Hul
Aleche South	y patron category run	NV.												
JRONA					Search									
Sam	rob patron categories	Check out Seasth	the catelog											
Iomo - Administration - Patron compositos														
System preferences	+ New catago	v												
Daalo paramatera	Patron cate	gories												
Librarian														
- Elberry groups - Bern lapsev	Showing 1 to 20 of	23 Real AB W armin	4.99211	i provinci i	9907 S 1 2013	· Search			Clear trice	Oute	mo Alexant			
Authorized veloce Patrona and circulation	Code v	Category name	тура е	Freedoor -	Age +	upper age +	Forolimetr -	Overdae +	Loss -	Hold +	Nesesping +	I Bracy +	Default +	Actions
Petrom categories Circulation and finas sulas	ADMINGTAP	Administrative Stat	dia1	99 months	18 years	to years		Yes	Shown		form other in model Advances includes seemal	No Imitation	Delvali	- Lai   B Leen
Patron attribute types											Ten created enter			
Library transfer limits	ASSINGUES	Assistant Protessor	Adult	5/3 months	10 years	OD ywara		Yes	Show		Second research	1 Horary	Detecti	whall Birest
inconstructures along											ten charles - small	HALF BEEN		
Citize and binne	ASSOCREDUCT	Annarian Budonnor	Adult	99 months	18	GE worker		Marci .	Shown		ferri shore - manual -	1 Deces	Default	[ and ] and a
locounting						100,000,000					Aduption reasons areast	Emitation		2.001 10.000
Debit types											them provident round?			
Adde: Shitsgraphic Sweevark Kote to BAUC: mapping	HASE)*	tlachelor of Audiology and Speach Language Pathology	Adult	4d months	10 years	OD years		Yes	tihown		Net due areas Adopted white could be classical and her classical areas her classical areas	1 lbory Induitor	Detault	Pak Binn
Authority types Classification assures	RED-SLED	Bechalier of Education Special Education (Heating Impairment)	Adult	12 months	75 years	02 years	•	Yes	Shown		New size weath Advance record, weath rough the second second record and second second	t Ibrary Imitadon	Detect	211k Brinnin
Record matching rates	COLOFENSO	Chine of Succession of	4.4	360 anoste	Walking and	62.0000		No.	about .		then they would	1 Berry	Part and	
tem search fields	000764930	CHICK CONCOL	0.010	and conferences	- 1. Sec. 1.	on house		200			Advantation/put carnel	Frestation	or could	/ con   B Cert
equisition parameters											inem phases in a small			
Currencies and sucharups releas Budgets	CONSTART	Contract Dial	Adult	tia montha	10 years	OI years		Sea	Sthorem		Net con areas of one of the case for the case of fact the case of	t Brony Imitation	DetecH	VPAR BING
EDF accounts	DECSE-H	Opioma in Early	Adult	12 months	10 years	OZ years		Yes	Shown		Security of an and a security and a security of the second sector of the	1 lborry	Detect	254 Bites

Figure 9: Creation of Patron categories

4.1.10 Setting up of circulation and fine rules

The book circulation and late return fine rules were set (Figure 10).

<ul> <li>Authorized values</li> </ul>	<ul> <li>detault (all libraries), all patron categories, same item type</li> </ul>										
Patrons and circulation	<ul> <li>default (all libraries), all patron categories, all item types</li> </ul>										
<ul> <li>Matron categories</li> </ul>	To modify a rule, create a new one with the same patron category and item by	pe.									
Circulation and fines rules	Select a library : Standard rules for all libraries 🗠 Clone these m	ales to: [All India Institute of Speech	and Hearing V Clone								
<ul> <li>Patron account types</li> <li>Ethenis hereitet limits</li> </ul>					Current	Current					Fine
Transport cost making	Patron category	item type	Actions	Note	checkouts	on-sile checkouts	Deriod	Unit	Hard due date	amount	chargi
Tem circulation alerte					anowed	allowed					interv
Cities and towns	Administrative Staff	Literature books	# Eds B Dalwin		2	Unlimited	15	Days	None defined	1.00	
Accounting	Administrative Staff	Reference text books	≠ Edit @ Dalwiss		1	Unlimited	2	Days	None defined	2.00	
Debit types	Administrative Staff	Stack text books	Cat Bolen		2	Unlimited	7	Days	None defined	1.00	
Catalog	Assistant Professor	At	Ant Board		8	Unimited	30	Days	None defined	1.00	
MARC bibliographic framework	Associate Professor	Al	d Base B Datase		8	Unimited	30	Dinti	None defined	1.00	
Koha to MARC mapping			Past Borns								
MARC bibliographic tramework test	bachelor of Autology and speech Language Hamology	CREATING DODES	Plan Blaine		2	Crismen	15	Days	Prome Germed	0.00	
Authority types	Bachelor of Audiology and Speech Language Pathology	Reference text books	# Eds B Dalam		1	Unimited	2	Days	None defined	2.00	
Record matching rules	Bachelor of Audiology and Speech Language Pathology	Stack text books	A Date B Dates		2	Unlimited	7	Days	None defined	1.00	
OAI sets configuration	Bachelor of Education Special Education (Hearing Impairment)	Literature books	Cot Bown		2	Unlimited	15	Days	None defined	1.00	
item search fields	Bachelor of Education Special Education (Hearing Impairment)	Reference text books	A Got Down		1	Unlimited	2	Days	None defined	2.00	
cquisition parameters	Bachelor of Education Special Education (Hearing Impairment)	Stack text books	d Sec. B Cares		2	Unimited	7	Davs	None defined	1.00	
Currencies and exchange rates	Contract Staff	Literature books	diam diama		4	Unitrated	10	Deva	None defined	1.02	
Funds	Contrast Card	Output to the second				Linkshod	0	0.00	Name defined	2.02	
EDI accounts	Consaction	Hererence lest books	2 Eas B Dalama		-	Cumunity	*	Unys	Pagine Genneg	2.00	
Library EANs	Contract Staff	Stack text books	# Est B Dalaria		4	Unimited	7	Days	None defined	1.00	
idditional parameters	Diploma in Early Childhood Special Education (Hearing Impairment)	Literature books	≠ Est @ Ouism		1	Unimited	15	Dáys	None defined	1.00	
239.50/SRU servers	Diploma in Early Childhood Special Education (Hearing Impairment)	Reference text books	≠ Edit @ Delem		1	Unimited	2	Days	None defined	2.00	
Did you mean?	Diploma in Early Childhood Special Education (Hearing Impairment)	Stack text books	# 6.01 B Datate		1	Unimited	7	Days	None defined	1.00	
Audio alerta	Diploma in Hearing Aid & Earmould Technology	Literature books	A BAL B Dates		1	Unlimited	15	Days	None defined	1.00	
Share usage statutics	Diploma in Hearing Aid & Earmould Technology	Reference text books	A Data B Datas		1	Unlimited	2	Days	None defined	2.00	
Share content with Maria KB	Diptoma in Hearing Aid & Earmould Technology	Stack text books	A Date   B Dates		1	Unlimited	7	Days	None defined	1.00	
Additional texts	Diptoma in Hearing, Language and Speech	Reference text books	A Date Online		1	Untrolled	2	Davs	None defined	2.00	
	M Sc - Audology	Literature books	A Get B Calana		2	Unimited	15	Days	None defined	1.00	
	M Sc - Audiology	Reference text books	A Tes B Cales		2	Unimited	2	Days	None defined	2.00	
	M Sic - Audiology	Steck text books	d fail d faire		2	Unimited	7	Dava	None defined	1.00	
	M Sc - Speech - Language Pathology	Literature books	A COL BOOM		2	Unimited	15	Dava	None defined	1.00	
	M Sr Snearth - Language Bathology	Reference text books	Part Bores		2	Unimited	2	Dave	None defined	2.00	
	M. Dr. Brench, J. Hannahan Balkathan	Starts Inc. South	And Breen			Links and		Dave	Anne defined	1.00	
	W. OL - Openetin - Language Patronogy	01000 WHI 50045	Ant BOams		*	Criminand	1	Conic 2	nume owned	1.00	

Figure 10: Setting up of circulation and fine rules

4.1.11 Checkout and hold policy

The checkout and hold policy were set according to the patron category (Figure 11)

	Total current checkoute	Total current on site checkoute	Total bobbs	
Patron category	allowed	allowed	allowed	
Administrative Staff	2	2	2	E Curate
Assistant Professor		8	8	@ Delate
Bachelor of Audiology and Speech Language Pathology	2	2	2	e Delate
Bachelor of Education Special Education (Hearing Impairment)	2	2	2	@ Datate
Clinical Supervisor	4	4	4	di Datata
Contract Blaff	4	4	4	C Derette
Diptoma in Early Childhood Special Education (Hearing Impairment)	1	1	1	e Delate
Diploma in Hearing Aid & Earnould Technology		1	1	e iniste
Diploma in Hearing, Language and Speech	1	1	1	@ Delate
M.Sc - Audiology	2	2	2	Course .
M.Sc Speech - Language Pathology	2	2	2	e Darate
Master of Education Special Education (Hearing Impairment)- M.Ed. Sp. Ed. (HI)	2	2	2	e Dalate
Ph. D - Audiology	4	4	4	· Delate
Ph. D - Speech-Language Pathology	4	4	4	@ Datate
Professor	10	10	10	C Darate
Project Stat	2	2	2	e faire
Sign Language Teacher	2	2	2	· Culute
Special Educator	2	2	2	O Delate
Staff	2	Unimited	2	In Taxata
Technical Matt	4	4	4	Course .
Administrative Plat		-		

Figure 11: checkout and hold policy

4.1.12 Creation of patrons

Patron accounts were created for all the library users (Figure 12).

Circulation Patrons Rearch +	Terr More -		Itbadross   All India Institute of I	speech and Hearing + Holp
Transformer Destroy of Center patron of	and member or partial manne			
JKONA	t+1 Gearch			
Search p	atrons Check out Check in Renew Search the catalog			
Home - Patrona - Patron details for Ms Aasha M	urugan (196.P001)			
Ms Aasha Murugan (10LP001)		C Add message	More =	
	Ms Aasha Murugan (19LP001)			
	Contact Information	₩ 848	Library use	× 841
	Primary phone: 971505600720		Card number: 19LP001	
	Primary email: maruga5@hotmail.com		Borrowernumber: 195	
	Gender: Penace		Category: Bachelor of Audiology and Speech Language Pathology (BAS)	(P)
971505580720		[ mmm]	Registration date: 0ii/11/2020	
Nes address stored.	Manage patron image	P	Expiration date: 07/31/2023	
Category: Bachelor of Audiology and Speech Language Pathology (BASLP) Home Enrary: All India Institute of Speech and Hearing			Edurary: Ad India Institute of Speech and Hearing	
	Patron messaging preferences	# 16.0 A	to guarantor	
	Dave to actuance Front Properts only 2		show level to has	
Lipidated on 09/11/2020 10:07	Hern due - III III		Username: 19LP001	
	Advance notice 2 - III III		Password:	
Check out	Pold Red - m -		Alternate address	* A01
Details	Ibern checks in a second secon			
Accounting	Contra departmenter -		Alternative contact	+ A44
Routing lists				
Circulation history	0 Checkout(s) Pines & Charges 0 Holds 0 / 0 Claim(s) Restrictions			
Holds history	Patron has nothing checked out.			
Modification log				
Notices				
Statistics				
Purchase suggestions				
				-

Figure 12: Patron account creation

4.1.13 Setting up of Check Out and Check-in

The system set up for check-out and check-in of the library resources were carried out (Figure 13 and 14).

reutation Patrons Search -	W Cart M	iore -									libadmin	All India	Institute	of Speech and Hea	ring - Hel
Phoha Erter patron care	rd number or parts	al name:													
JKOnu				0	dent										
Check out	Check in Po	enew Search the catalog													
te - Circulation - Checkouts - Mr Abhranil Pram	manik (19LP002)														
Abhranil Pramanik (19LP002)	✓ Eat	+ Abl guarantee Abl guarantee	ps password	2 Duplicate	eb Print =	Q Search to	hold C Add means	iga More =							
	Checking o	ut to Mr Abhranil Praman rode	k (19LP002) Check out					Attention: Messages:	- message						
	Checkout s	ettings													
18447181 randoramanh/2001@gmail.com	1 Checkout	(a) O Holds 0/00	taim(s) Restr	rictions											
and the second															
Hearing novernumber: 195 dated on 05/03/2021 14:44	Due -	THE -	Record-level -	type o	Collection +	Location +	Home library =	Checked o	Checked out o	Call no +	Charge o	Fine +	Price +	Renew select all 1 none	Check in select all (
Check out	Today's ch	reckouts													
Details	07/15/2021	Nemembering trauma : by Molion, Phil. 15000	Stack text books	Dooks	66/1		All India Institute of Speech and Hearing	07/07/2021 17:47	All India Institute of Speech and Hearing	615.050 223 9 MOL	0.00	0.00	0.00	O Net renewable (0 of 0 renewals	
Accounting														(analog)	
Routing lists														due date:	
Circulation history										Totals:	0.00	0.00	0.00		<b></b>
Holds history														fines on	
Modification log	All and they	character immediately ( )												internet.	
Notices	10000	- crieciano infriênanity []	10												
Statistics	✓ Reneu	or check in selected items	de Renew all												

Figure 13: Check out



Figure 14: Check–in

4.1.14 Setting up of Reports

Various types of reports necessary for book circulation and patron management were created (Figure 15)

	ous Need > Last > abgroup + Notes + A (52)	Nearch: Luthor e Creation e date e	N Clear filer • C	olumns 🛓 Export Public + JSON URL	Cache expery      Saved	Actions
Bayed reports           Image 1 to at 100 (32) where i may i pro- to at 100 (32) where i pro- i pro- i at 100 (32) where i pro- i pro- i at 100 (32) where i pro- i pro- i pro- to at 100 (32) where i pro- i pro- to at 100 (32) where i pro- i pro- to at 100 (32) where i pro- pro- to at 100 (32) where i pro- to at 100 (32) wh	abgroup + Notes + Au (5)	Beautic Lutilition + Creation + date + sedmin 00/23/2019	N Clear Stor 🔷 🗘	olumna 🏦 Export Public + JSON URL	<ul> <li>Cache experv</li> <li>Saved</li> </ul>	Actions
N         Company         Provide         Prov	abgroup + Notes + Au (52)	Teach Luthor + Creation + date +	36 Clear filter OO	olumna 🛓 Export Public + JSON URL	Cache expiry Saved	Actions
Bouldy 1 to 1 of 1 the Bould 2 to 1 to 1 the Bould 2 to 1 to 1 the Bould 2 to 1 the Bou	abgroup + Notes + Au (60)	meanth: Luthor + Creation + date + constantion = 00/23/2019	34 Clear fiter O	Public + JSON URL	. Cache expery . Saved .	Actions
No         Bit point name         Type +         Group +         S           0         0         155H LOC         700         6         100         5           0         0         155H LOC         700 <t< th=""><th>abgroup + Notes + Au IBu</th><th>admin 00/23/2019</th><th>Lastedit + Lastrun +</th><th>Public + JSON URL</th><th>Cache expery Saved</th><th>Actions</th></t<>	abgroup + Notes + Au IBu	admin 00/23/2019	Lastedit + Lastrun +	Public + JSON URL	Cache expery Saved	Actions
e ISEN LOC e Local Image e Local Image e Local Image e Local Image	(5)	admin 00/23/2019			(and other a) teacher	
e Glear s ports Date Wrise Lats of Date Wrise Lats of Date Wrise Lats of Date Wrise Lats of Date Wrise Lats of Date Wrise Lats of Date Wrise Lats			13:52 17:00	No /cgi-bin/koha/svc/repor id=8	e? 300	P Run a
ports Date Wise List of Checked Call Books	(52	admin 00/26/2019 2)	08/26/2019 03/18/2021 10:18 17:01	No /cgi-bin/koha/avc/repor id19	e? 300	Britten in
	180a (52	admin 03/04/2020 2)	03/04/2020 04/23/2021 18:48 12:11	No /cgi-bin/koha/svc/repor id=10	17 300	n flun 🔺
ionary Catalogue Catalogue	104	admin 03/04/2020 2)	03/04/2020 04/08/2021 19:27 13:41	No /cgl-ben/koha/svc/repor	67 300	# flun   =
euroes  ort library  12 Book card printing Catalogue	1054	admin 03/04/2020 2)	04/07/2021 07/01/2021 17:08 14:39	No /ogi-bentioharsvo/repor	87 300	B Run -
abase schema   15 Daily checked out books Report	libs (52	admin 03/18/2021 2)	03/24/2021 07/01/2021 14:40 12:54	No /cgi-bin/koha/svc/repor idi115	47 300	Billion a
17 No. of Check out and     Check in	1804 (52	admin 03/24/2021	03/24/2021 04/23/2021 18:08 12:10	No /cgi-bin/koha/svc/repor	<b>17</b> 300	Film a
19 PATRON BASLP	1854 (52	admin 04/16/2021 2)	05/09/2021 05/23/2021 22:50 11:11	No /cgi-bin/koha/svc/repor id=19	#P 300	# flun
21 Access Register	1054 (52	admin 07/01/2021 2)	07/01/2021 07/01/2021 14:20 14:20	No /ogi-bin/koha/svo/repor	87 300	Front -
22 Access Register	libs (52	admin 07/01/2021 2)	07/01/2021 07/01/2021 15:10 15:10	No /cgi-bin/koha/svc/repor idi:22	42 200	FRM a
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Figure 15: Types of Reports

4.1.15 Setting up of Searching System

The database searching system including the display of search results and record description was set up (Figure 16 & 17).

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	Image by Atal, Bishnu S   Miller, Joanne L   Kent, Raymond D   Acoustical Society of America   American Institute of Physics.	<ol> <li>All India Institute of Speech and Hearing (006.454 ATL) (1)</li> </ol>

Figure: 16: Search results

Refine your search	Your search returned 667 results.	
Availability	1 2 5 4 5 6 7 8 9 10 Next + Last > Relevance	~
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Authors Animesh Barman	3. Speech and language engineering / Martin Rajman, editor ; with contributions by Romaric Besançon [et al.]. by Rajman, Martin, 1902-   Besançon, Romaric.	4

Figure 17: Record Description

4.1.16 Front-Page Development

A front-page was developed to serve as a common interface for the entire library information resources and services (Figure 18).

🗮 Cart 📰 L	sts - 🖂 Ask A Librarian	Log in to your account Search history Clear
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- Please choose		Login:
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New Arrivals		Password:
Question Papers	Search	Search
Latest News		Login
Speech	Advanced Search	Working Hours
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4.2 Design and Development of Institutional Repository

The Institutional repository was developed on DSpace open-source application. The repository was linked on the front page of the library website developed on Koha.

4.2.1 Resource Types and Organization

In addition to the existing fou types of resources, i.e. PG dissertations, PhD theses, ARF projects and Independent projects, it is decided to incorportae faculty publications in the form of books, book chapters, journal articles, conference proceedings, presentations and

previuos question papers in the new repository. All the resources are organized under the parent Departments in which the faculty are working.

As per the hierarchical system provided by the DSpace, a top-level community was created in the name *All India Institute of Speech and Hearing*, and *sub-level communities* in the names of ten Departments of the Institute as follows:

- a. Department of Audiology
- b. Department of Clinical Psychology
- c. Department of Clinical Services
- d. Department of Electronics
- e. Department of ENT
- f. Department of Special Education
- g. Department of Prevention of Communication Disorders
- h. Department of Speech-Language Pathology
- i. Department of Speech-Language Sciences
- j. Tele-Centre for Persons with Communication Disorders

Under these Departments, the following collection of resources were made

- a. Books
- b. Book chapters
- c. Journal articles
- d. Conference papers
- e. Conference presentations
- f. Previuos question papers
- g. Guest Lectures
- h. PG dissertations
- i. PhD theses
- j. ARF projects
- k. Independent projects
- I. Extramural projects

Inside these collections, the items are stored as files and metadata.

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Figure 19: Content organization

### 4.2.2 Metadata Creation

The following metadata were created for describing the items in the collection;

Journal Articles

- Author(s)
- Title
- Journal Name
- ISSN No.
- National/International
- Volume No.
- Issue No.
- Page No.
- Year
- Department
- Language
- Keywords
- Abstract
- DOI
- Full text

Conference Papers/ Proceedings

- Author(s)
- Title
- Conference Name
- Conference Place
- National/International
- Volume No.
- Issue No.
- Page No.

- Year
- Department
- Language
- Keywords
- Abstract
- DOI
- Full text

Conference/Seminar Presentation

- Author(s)
- Title of the Presentation/Poster
- Conference/Seminar Name
- Conference/Seminar Place
- National/International
- Presentation Date
- Keywords
- Department
- Language
- Presentation File

## Invited Talk

- Name of the Faculty/Staff
- Title of the Lecture
- Subject
- Conference/Seminar/Workshop etc.
- Organizer
- Organizer Place
- Lecture Delivered Date
- Department
- Language

Book Chapter

- Author(s)
- Title of the Chapter
- Book Name
- Book Editor
- Subject
- Publisher
- Publisher Place
- Page No.
- Year
- Keywords
- Department
- Language
- DOI

- Abstract
- Full text

Book

- Author(s)/Editor(s)
- Title of the Book
- Subject
- Publisher
- Publisher Place
- Year
- No. of Pages
- ISBN
- Keywords
- Department
- Language
- DOI
- Abstract
- Full text

Book CD-ROMs

- Author(s)
- Title
- Subject
- Publisher
- Publisher Place
- Year
- ISBN
- Accession No.
- Language
- Keywords
- CD-ROM Contents

**ARF** Project Reports

- Principal Investigator(s)
- Co-Investigator(s)
- Title
- Subject
- Abstract
- Amount
- Period
- Full-text

Extramural Project Reports

- Principal Investigator(s)
- Co-Investigator(s)
- Title
- Abstract
- Subject
- Funding Agency
- Amount
- Period
- Full-text

PG Dissertations

- Author(s)
- Title
- Subject
- Abstract
- Guide
- Year
- Full-text

Independent Projects

- Author(s)
- Title
- Subject
- Abstract
- Guide
- Year
- Full-text

Question Papers

- Title
- Subject
- Year
- File

## 4.2.3 Front Page Development

A front page was developed for the repository as shown in figure 19.



Figure 19: Front Page of the IR

#### Chapter 5

# Discussion and Conclusion

#### 5.1 Discussion

Institutional repositories play an important role in showcasing the scientific output of a higher education institution and Online Public Access Catalogue is an important information retrieval tool of a modern library and information centre.

One of the major inadequacies of the existing IR of AIISH is related to the content which is restricted to postgraduate and doctoral research reports along with the institute-funded research reports. The newly designed repository has additional content like post-print and pre-print of faculty publications, teaching notes, presentations etc. The issues and concerns related to depositing pre-print and postprint of faculty publications will be addressed by developing a suitable policy for the repository in consultation with the competent authority.

Inclusion of teaching notes, classroom presentations, syllabus, question papers etc. in the repository will surely add value to the repository and it will serve as a reliable learning and teaching support tool.

One of the best practices of the existing AIISH IR is its openness. It is a true open access repository providing free access to the full-text content to the scientific community across the world. The new repository, now developed on the opensource platform also follows the same policy of open-ness. It will serve the affiliated users i.e. the academic community within the organization and non-affiliated users from across the world.

The new repository, the resources are organized broadly under the subject or discipline dealt at the Institute followed by the type of resources.

The repository is set up in such a way that the affiliated end-user community can submit the resources directly to the repository. The system also has a mechanism to review the submitted item by the repository administrator to determine the authority of the submitter, subject area, type of item, and metadata. The item submitted may be rejected during the review stage if the submitter is not an authorized person. It may also be returned to the submitter for revision and resubmission. Hopefully, the provision for self-submission will enhance the quantity of the repository content.

AS the repository is set up to accommodate different types of resources, provision is made for accepting a wide range of file formats.

The major drawbacks of the existing OPAC are related to late return fine, new arrival display and absence of common search interface. The new OPAC has features and functionalities to address all these issues.

#### 5.2 Conclusion

Institutional Repository and Online Public Access Catalogue are integral parts of a modern library and information system. The AIISH library and information centre deployed its Institutional Repository and Online Public Access Catalogue ten years back using proprietary software applications. In this project, the existing IR and OPAC were redesigned and developed using the latest versions of the world's most reputed software applications in the field. The IR was built on DSpace software and the OPAC on Koha software. The newly developed applications have a number of additional features and functionalities when compared with the existing ones. They will be maintained inhouse and upgraded with the latest versions of both the applications.

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