National Digital Library of India

Development of National Digital Library of India – Towards Building a National Asset

WINNER "Billionth" South Asia Award 2017:
in Learning and Education Category
for Android Mobile App

NDL: VISION & MISSION

REGIONAL (EAST-V) IDR WORKSHOP
CENTRAL LIBRARY, IIT (ISM), DHANBAD

Prof. PARTHA PRATIM DAS
dpd@cse.iitkgp.ernet.in
Joint PI, NDL Project, NME-ICT, MHRD
Indian Institute of Technology, Kharagpur

24-NOV-2017
BUILD UP
NATIONAL DIGITAL LIBRARY OF INDIA
AS A NATIONAL KNOWLEDGE ASSET –
THE KEY DRIVING FORCE FOR EDUCATION,
RESEARCH, INNOVATION, AND
KNOWLEDGE ECONOMY IN INDIA
NDL Mission

To create a 24X7-enabled integrated NDL as a ubiquitous digital knowledge source of the nation – catering to immersive e-learning for all learners at all levels in all areas.

To initiate a movement for integrated digital learning across India.
NDL Motto

INCLUSIVE & OPEN
National Digital Library of India

Issues, Architecture And Use Models

Libraries are more important to the education system than the institutions such as schools, colleges and universities
– Rabindranath Tagore
National Digital Library: Issues

**User-side**
- Wide geographic expanse & Large population
- Huge number of students
- Large number of institutions
- Varied linguistic diversity
- Severe lack of Teachers

**Provider-side**
- Wealth of digital content
  - Books and Articles
  - ETD
  - Question Papers and Solutions
  - Video Lectures - MOOCs
  - Simulations & Animations
  - NMEICT Projects
  - Data
  - ...
- No single-window search
- Google search uses keyword – no metadata search
- Widely varied DL technology
- Lack of Interactivity, Vernacular support
- Low integration between content and learning system
- Weak ecosystem between learners and teachers
National Digital Library: Service Architecture

National Digital Library

- Content Creation
- Content Search
- Learning Content
- Experience-based Learning
- Multi-Lingual Content
- Mobile Apps
- Authoring Services
- Acquisition Services
- Dissemination Services
- Digital Repository
- Learning Services
- Personalization Services
- Localization Services
- Open Services...

Multi-faceted Interface
APIs
Content Borrowing
Content Access
IIT, Kharagpur
24/11/2017
Prof. P P Das, CSE, IIT, Kharagpur
Use Models

Physically Challenged

Researchers

Learners

Professionals

Content Access

Institutional Digital Repositories

Web Content Harvesting

NDL Repository

Learning Management System

Contributing Institutions

Educators

IIT, Kharagpur

24/11/2017

Prof. P P Das, CSE, IIT, Kharagpur
Presentation Model

- Not a new library – an umbrella
- Collects and ingests metadata only
- Presents full-text from source view
- Provides:
  - Search
  - Browse
Objective and Scope

TARGETS
CONTENTS,
STAKEHOLDERS,
CONTRIBUTORS,
USERS,
ARCHITECTURE, AND
THE BIG PICTURE

S R Ranganathan Laws

• Books are for use
• Every reader his [or her] book
• Every book its reader
• Save the time of the reader
• The library is a growing organism
Objectives

- **A 24X7-enabled Infrastructure** for NDLI with single window search facility – To include h/w systems, n/w, s/w tools, applications and interoperability
- **Harvest IDRs** across institutions of the nation to provide integrated access
- Facilitate select institutes to **disseminate existing content and create new digital content**
- **Immersive E-learning environments** at multiple levels spanning across
  - **All academic levels** – school to life-long learning
  - **All disciplines** – Science, Arts, Engineering, Medical, Law, and
  - **All languages** – used as medium of instruction.
- **Interfaces in Indian Languages & for DA**
Digital Contents

Digital, Surrogate
Digital, Metadata
Digital, etc.

• Content at NDL
  ○ Born-digital object
  ○ Digital surrogate of a physical object
  ○ Digital metadata of physical object

• Metadata at NDL
  ○ NDL does not store contents
  ○ NDL only ingests metadata for Search & Browse
  ○ Content (Full-text) is delivered from Source

A content is included (metadata ingested) in NDL if it is expected to have educational value
Faculty Publications, ETD (Electronic Thesis & Dissertation): DSc-PhD-Masters-Undergrad, Research Projects

Books & Periodicals, Open Access Journals, E-Books & Subscribed E-Resource

Annual Reports, Project Reports, Convocation, Working Papers, Others

Encyclopaedia Dictionaries Directories Others

Lecture Slides, Videos, Class Notes, Courseware

Term Papers, Assignments, Solutions

Lab Experiments, Manuals, Case Studies

Question Banks (JEE / GATE / NET / CAT ), Model Answers

Institutional Digital Repository of Contributing Institutes

Range of Contents

Institutional and Open Contributions. Multi-modal, Multi-faceted

Datasets, Benchmarks, Models, Maps, Software

Manuscripts, Painting, Sculpture, Music, Dance, Drama

Audio & Video Content

Institutions of School & Higher Education, Boards

Research and Professional Institutions, Central / State University

IIT, Kharagpur

24/11/2017

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Content View Architecture

Vertical-Specific Custom Interface and Search

- School Vertical
- Domain Vertical (Medical/ Legal/...)
- Competitive Exam Vertical
- Data Vertical
- Application Vertical

Generic Interface and Search

- Textbook, Lesson View
- MCQ / MSQ / ...
- App Launcher
- Browser
## Stakeholders

### Roles and Responsibilities

<table>
<thead>
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<th>Stakeholder</th>
<th>Roles and Responsibility</th>
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<tr>
<td><strong>Government</strong></td>
<td>1. Sponsor and facilitator&lt;br&gt;2. Content Contributor&lt;br&gt;• Ministries / Departments&lt;br&gt;• R &amp; D Labs</td>
</tr>
<tr>
<td><strong>Public</strong></td>
<td>1. Use and Feedback&lt;br&gt;2. Metadata by Crowd Sourcing&lt;br&gt;3. Content by Crowd Sourcing</td>
</tr>
<tr>
<td><strong>Industry</strong></td>
<td>1. Technology Providers</td>
</tr>
<tr>
<td><strong>Publishers</strong></td>
<td>1. Metadata Provider&lt;br&gt;2. Content Provider (under various licensing schemes)</td>
</tr>
</tbody>
</table>
Contributors

CFTI, State and Central Universities, R & D Labs, Govt. Depts, Free Portals, Publishers, etc.
• Registration is Open to all

• Registration Types:
  - Individual
    - Registers directly
  - Institutional
    - By request from Institution
    - Managed by authenticated Nodal Person
    - Convenient for bulk upload of users
Architecture

- **Index Management**
  - Ingestion of Metadata
  - Indexing of Metadata for Search

- **Content Management**
  - Dissemination of local contents

- **Learning Management**
  - Creation of Content
  - Handling learning interactions
National Digital Initiative in Education

Knowledge Repository: Internet, Mobile

National Digital Library of India

Credit Transfer and Virtual Certification (NAD)

SWAYAM, SWAYAM Prabha, GIAN

School, Certificate, Diploma, UG & PG: Internet

SWAYAM: instrument for self-actualisation

SWAYAM Prabha: 32 DTH, 24x7

School, UG, PG, Open U, IIT PAL: TV – DTH

Up to 20 credits from MOOCs

IIT, Kharagpur 24/11/2017 Prof. P P Das, CSE, IIT, Kharagpur
Where the mind is without fear and the head is held high
Where knowledge is free
Where the world has not been broken up into fragments
By narrow domestic walls
Where words come out from the depth of truth
Where tireless striving stretches its arms towards perfection
Where the clear stream of reason has not lost its way
Into the dreary desert sand of dead habit
Where the mind is led forward by thee
Into ever-widening thought and action
Into that heaven of freedom, my Father, let my country awake.

– Rabindranath Tagore
Landing Page

About National Digital Library of India
- Learning Resource Type
- Subject Domain
- Featured Sources
- News and Events

Educational materials are available for users ranging from primary to post-graduate levels
Title: Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Authors: MAZUMDAR, C  
HOSSAIN, Z  
NAGARAJAN, R  
GODART, C  
DHAR, SK  
GUPTA, LC  
PADALIA, BD  
VIJAYARAGHAVAN, R

Keywords: cerusn3  

Issue Date: 1996  
Publisher: AMER INST PHYSICS

Abstract: SmRuSn3 is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sm ions at only one of them are in VF state while the Sm ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sm site, consistent with the noncubic symmetry of the Sm site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sn site at 4.2 K is small. (C) 1996 American Institute of Physics.

URI: http://dx.doi.org/10.1063/1.361996  
http://dspace.library.iitb.ac.in/xmlui/handle/10054/14612  
http://hdl.handle.net/100/1441

ISSN: 0021-8979

Appears in Collections: Proceedings papers
Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3


Source: IIT Bombay

Content Type: Text

Publisher: AVERT INST PHYSICS

File Format: HTML / HTML

Language: English

Subject Keyword: osruan3

Abstract: SmRuSn3 is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sm ions at only one of them are in VF state while the Sm ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sn site, consistent with the noncubic symmetry of the Sn site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sn site at 4.2 K is small. (C) 1996 American Institute of Physics.
Transport, magnetic, and $^{119}$Sn Mössbauer studies on magnetically
ordered valence fluctuating compound SmRuSn$_3$


Citation: J. Appl. Phys. 79, 6349 (1996); doi: 10.1063/1.361996
View online: http://dx.doi.org/10.1063/1.361996
View Table of Contents: http://jap.aip.org/resource/1/JAPIAU/V79/I8
Published by the American Institute of Physics.

Related Articles
Valence fluctuation and electron–phonon coupling in La$_{68-x}$Ce$_x$Al$_{10}$Cu$_{20}$Co$_2$ ($x = 0$, 34, and 68) metallic
glasses
Intermediate valency of Eu in a cubic intermetallic compound Ce$_{0.5}$Eu$_{0.5}$Pd$_3$
Interface and Mn valence effects in ferromagnetic insulating multilayers based on Mn and tin oxide
J. Appl. Phys. 103, 07D129 (2008)
Charge states of strongly correlated 3d oxides: from typical insulator to unconventional electron–hole Bose liquid
The effect of mixed Mn valences on Li migration in LiMn$_2$O$_4$ spinel: A molecular dynamics study

Additional Information on J. Appl. Phys.
Chapter Five

MAGNETISM AND MATTER
IIT, Kharagpur

24/11/2017

Search Filter Page (Video)
Browse by (Learning Resource Type) Page

- Book
- Article
- Thesis
- Question Paper
- Video Lecture
- Audio Lecture

Refine browse results:
- Author
- Subject Category
- Educational Degree
- Difficulty Level
- Educational Level
- File Format
- Language
- Source
- Content Type

On resolvable and affine resolvable variance - balanced designs
Source: ISI Kolkata
Author: Mukherjee, Reful | Kageyama, Sanpei
UG or PG

Tenurial contracts in a peasant movement belt: field data on nalbari, Kharibari and Phansidewa regions
Source: ISI Kolkata
Author: Chattapadhyay, Manabendu | Ghosh, Sumit Kumar
UG or PG

Characterizations multivariate normality. I through independence of some statistics
Source: ISI Kolkata
Author: Khatri, C. G. | Rao, C. Radhakrishna
UG or PG

Demography and demographical genetics of two isolated mountain villages of Northern Sikkim, Eastern Himalaya
Source: ISI Kolkata
Author: Das, Sawpan Kumar | Majumder, Pariha P.
UG or PG

An IPPS sampling scheme using Lahiri's method of selection
NDL Mobile App

Available on

Android

And

iOS
Institutional Roles and Responsibilities

The worth of a librarian should be gauged by his power of attracting and looking after such circles by acting as the intermediary of an intimacy of relationship between reader and the library. – Rabindranath Tagore

IIT, Kharagpur

24/11/2017 Prof. P P Das, CSE, IIT, Kharagpur
# Roles and Responsibilities

## Host Institution

- **IDR**
  - Support for Setting up IDR
  - Installation CD
  - Manual
  - Training
  - IDR Service, if needed

- **Metadata**
  - NDL Metadata Standard
  - Creation, Curation Workflow

- **User**
  - Institutional Registration for Nodal Person
  - Bulk Addition of Users

- **Ongoing Support**
  - Over email, phone
  - Hands-on at NDL, if needed

## Contributing or Participating Institution

- **IDR (CI only)**
  - Setup IDR in Institutional LAN
  - Register with OPENDOAR / ROADMAP
  - OAI-PMH compliance for harvesting
  - OAI-ORE compliance for full-text access
  - Allow external access & Update regularly

- **Content (CI only)**
  - Add Content
  - Encourage faculty, students, staff to contribute
  - Create and Curate Metadata

- **User**
  - Register as an Institution
  - Add users in bulk or send to NDL

- **Promote**
  - Organize Workshop
  - Identify and Integrate Source
Technology of NDL

METADATA ENGINEERING

USER INTERFACE & EXPERIENCE TRACKING
• Metadata Standard
• Metadata Acquisition
Metadata Standard

Source: http://courseweb.ischool.illinois.edu/~butler9/LIS501b/current.html
Metadata

- Metadata
  - Is primarily **textual information** relating to Content
  - Includes information that enables users to **identify, discover, search, browse, interpret, or manage** Content
  - Includes **hyperlinks** that direct users to Content on the Source
  - May include an **expressive description** of the Content

- Metadata Standard
  - Defines **common understanding of the semantics** of the data
  - Ensures **correct and proper use** and interpretation of the data
  - Defined through a **set of fields, vocabs (optional), and instructions** for fill-up
NDL Metadata Design Challenges

- **Wide** category of resources
  - Generic metadata or domain specific?

- **Openness** of repository
  - Closed metadata standard may fail to describe a new resource

- **Scale** is enormous
  - Manual annotation is infeasible
  - Automatic annotation guided by crowd sourcing?

**the story of Metadata**

data about data
Metadata Requirements Specs

- To describe any digital resource
  - Generic content metadata
    - Contributor, Description, Language, Format etc.
- To describe domain specific resources
  - Educational content metadata
    - Educational level, ToC, Type of learning material etc.
  - Thesis metadata
    - Institution, advisor, degree, researcher
NDL Metadata Standard

- NDL Metadata Standard v 1.0 is an **Open Virtual Standard**
  
  - **URL:**

- Schema is categorized into three profiles:
  
  - **Generic Metadata:**
    - Describes general attributes of the contents
    - Adopted from Dublin Core Metadata Standard
  
  - **Educational Metadata:**
    - Describes the educational attributes of the resources and helps in enumerating properties of the contents relevant to teaching-learning process
    - Adopted from Learning Resource Metadata Initiative (LRMI)

  - **Thesis Metadata:**
    - Describes dissertation or thesis related metadata fields
    - Adopted from Shodhganga Thesis Metadata Standard

- More profiles may be added in future

- Uses the **namespace of Dublin Core (dc.)**
Metadata Envelop

- Dublin Core (generic)
  - title
  - date
  - language
  - author
  - description
  - type
  - subject

- LRMI (educational)
  - board
  - difficultyLevel
  - typicalLT
  - prerequisiteTopic
  - pedagogicObjective
  - educationLevel

- NDL Metadata
- Shodhganga (thesis)
  - researcher
  - keyword
  - advisor
  - place
  - department
  - institution
  - awarded
  - degree
Metadata Acquisition
Acquisition Scenarios

**Locate Content**
- Harvest Institutional IDRs
- Crawl Websites
- In Bulk – from Publishers
- Donated by Source
- Source-supported API
- ...

**Acquire Metadata**
- Creation
  - Manual
  - Automated
- Translation
  - Format
  - Standard / Schema
- Curation
  - Manual
  - Assisted
- Ingestion
Challenges in Metadata Acquisition

- Different sources follow different norm in annotation
  - Automation of curation

- Errors in sourced data
  - Error listing
  - Manual curation

- Errors in manual annotation
  - Review step before actual submission in database
  - Manual curation

- Set up norm/guideline
  - Controlled vocabulary
Translation Issues

- Variation in Subject classification standards
  - Dewey Decimal Classification (DDC)
  - Library of Congress Classification (LCC)
  - Library of Congress Subject Headings (LCSH)

- Mapping terminology for different languages
  - Translate when equivalent terminology is present
  - Transliterate otherwise
NDL Metadata Extraction Toolkit

- Automated metadata extraction workflow
- Syntactic metadata extractor
  - Author name, ISBN, Publisher, dates etc.
- Table of content extractor
- Wikification for keyword extraction
- Learning resource metadata
- Toolchain for metadata extraction

*Once completed and tested, the toolkit will be released to public and open-sourced*
Experience Tracking and UI

- **Experience Tracking**
  - To offer customized search results

- **Multi-lingual Support**
  - Reduce cognitive load for native use

- **Personalization**
  - Customized UI to suit user grade

Experience API (xAPI) / Tin Can API
- Connects learning content and learning systems to record and track all types of learning experiences

Learning Record Store (LRS)
- Stores learning experiences

Partha searched ‘tiger’
Partha navigated to Tiger Wiki
Partha studied Wiki (3 min)
Partha downloaded tiger image (4 images)
Partha checked tiger map (2 min)
Partha enlarged map at Sunderbans (twice)
Partha searched ‘national animal of India’

Infer:
Partha learnt – tiger is the national animal (of India)
... possibly

Source: https://tincanapi.com/overview/
UI Technology: Web Interface

API End Points:

- RestFul API endpoint
- CMS API, Index API and LMS API
- Parameterized access to the index

API Sandbox

- Web interface is an app using NDL API
- Extended Search Features
  - Facet based search result refinement
  - DDC Topic tree based content browsing
  - Tag, comment on a content
  - Target group specific interface
  - Bookshelf
  - Rating and sharing

- NDL-Specific Features
  - Multi-lingual enablement
    - Multi-lingual query interface powered by Google transliteration
    - Cross-lingual search
  - Personalization
Copyright & License

HOW DOES NDL COPE WITH COPYRIGHT AND LICENSING ISSUES
Copyright Act, 1957 (Amendment 2012)

Is metadata copyrighted?

Yes / No / May be

Copyright of Metadata is contested

Source: http://lj.libraryjournal.com/2013/02/opinion/peer-to-peer-review/metadata-and-copyright-peer-to-peer-review/

- Copyright is a bundle of rights given by the law to
  - Creators of literary, dramatic, musical and artistic works and
  - Producers of cinematograph films and sound recordings

- Rights are:
  - reproduction of the work,
  - communication of the work to the public,
  - adaptation of the work and,
  - translation of the work

- Creator / Author is the first Owner

- Ownership (Title) can be transferred (assigned)
Copyright of Metadata

- **NDL principles as follows:**
  - Vast Majority of Metadata is Not Subject to Copyright Restrictions
  - NDL’s Partners Share the NDL’s Commitment
  - NDL Asserts No Rights Over its Database of Metadata and Dedicates its Contributions to the Public Domain
  - Free and Unencumbered Access to Metadata

License Mechanisms

• Content Access Views in NDL
  o Metadata View
    § This shows the metadata of the item – as maintained in NDL
  o Full Text View
    § This shows the view and provides access to full text – offered by the content source

A license encapsulates the rights & privileges that a copyright holder grants to someone else vis-à-vis something they have created.
Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Abstract

SmRuSn3 is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sm ions at only one of them are in VF state while the Sm ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sm site, consistent with the noncubic symmetry of the Sn site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sn site at 4.2 K is small. (C) 1996 American Institute of Physics.
Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Show full item record

Title: Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Author: MAZUNDR, C; HOSSAIN, T; NAGARAJAN, R; GODART, C; DHAR, SK; GUPTA, LC; PADALIA, BD; VILJARAGHAVAN, R

SmRuSn3 is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sn sites at only one of them are in VF state while the Sn ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sn site, consistent with the noncubic symmetry of the Sn site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sn site at 4.2 K is small. (C) 1996 American Institute of Physics.

Abstract:

URL: http://dx.doi.org/10.1063/1.361996
http://repository.iith.ac.in/xmlui/handle/10058/14612
http://hdl.handle.net/100/1442
## Access Options

<table>
<thead>
<tr>
<th>Access Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Open</strong></td>
<td>Full-text available to all (Example: NCERT)</td>
</tr>
<tr>
<td><strong>NDL Users</strong></td>
<td>Full-text available through NDL, <em>not directly</em> from Source (Example: South Asia Archive)</td>
</tr>
<tr>
<td><strong>Limited Access</strong></td>
<td>Part of text available but full-text requires authorization by Source authority (Example: IISER, Bhopal)</td>
</tr>
<tr>
<td><strong>Subscribed</strong></td>
<td>Full-text available from institutions that have subscribed to the Source (Example: Springer)</td>
</tr>
<tr>
<td><strong>Restricted</strong></td>
<td>Full-text access requires authorization by Source authority and separate login to the Source (Example: IIT Jodhpur)</td>
</tr>
</tbody>
</table>
National Licensing

- An initiative by eSS:
  - e-ShodhSindhu: Consortium for Higher Education Electronic Resources

- Licensing being negotiated with Publishers
  - Institutional License:
    - Accessible from within designated institutional network: IP filtered
  - NDL Supported License:
    - Accessible if requested from NDL: Concurrent use-basis
Project Status
<table>
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<tr>
<th>No.</th>
<th>Event Description</th>
<th>Location</th>
<th>Dates</th>
</tr>
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<tr>
<td>1.</td>
<td>National (General) IDR WS @ IIT Kharagpur</td>
<td>IIT Kharagpur</td>
<td>15/17-June-15</td>
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<td>2.</td>
<td>Regional (North-East-I) IDR WS @ IIT Guwahati</td>
<td>IIT Guwahati</td>
<td>04/05-July-15</td>
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<td>IIT Roorkee</td>
<td>24/25-Aug-15</td>
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<td>Regional (West-I) IDR WS @ M S University</td>
<td>M S University</td>
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<td>Regional (South-I) IDR WS @ IIT Madras</td>
<td>IIT Madras</td>
<td>25/26-Mar-16</td>
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<td>Regional (South-II) IDR WS @ IISc, Bangalore</td>
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<td>20/21-May-16</td>
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<td>7.</td>
<td>Regional (South-III) IDR WS @ IIIT, Hyderabad</td>
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<td>8.</td>
<td>Regional (North-II) IDR WS @ JNU, New Delhi</td>
<td>JNU, New Delhi</td>
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<td>Regional (North-East-II) IDR WS @ NIT, Meghalaya</td>
<td>NIT, Meghalaya</td>
<td>23/24-Sep-16</td>
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<td>10.</td>
<td>Regional (West-II) IDR WS @ IISER, Pune</td>
<td>IISER, Pune</td>
<td>05/06-Oct-16</td>
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<td>11.</td>
<td>National (Medical) IDR WS @ AIIMS, New Delhi</td>
<td>AIIMS, New Delhi</td>
<td>20/21-Oct-16</td>
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<td>12.</td>
<td>Regional (Central-I) IDR WS @ NIT, Raipur</td>
<td>NIT, Raipur</td>
<td>18/19-Feb-16</td>
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<td>13.</td>
<td>National (Legal) IDR WS @ NUJS, Kolkata</td>
<td>NUJS, Kolkata</td>
<td>09/10-Dec-16</td>
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<td>14.</td>
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<td>13/14-Jan-17</td>
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<td>15.</td>
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<td>University of Calcutta</td>
<td>10/11-Mar-17</td>
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<td>SPA, Vijayawada</td>
<td>21/22-Apr-17</td>
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<tr>
<td>18.</td>
<td>Regional (West-III) IDR WS @ MNIT, Jaipur</td>
<td>MNIT, Jaipur</td>
<td>12/13-May-17</td>
</tr>
<tr>
<td>19.</td>
<td>Regional (East-IV) IDR WS @ IIT-BHU, Varanasi</td>
<td>IIT-BHU, Varanasi</td>
<td>02/03-Jun-17</td>
</tr>
<tr>
<td>20.</td>
<td>Regional (South-V) IDR WS @ P N Panicker Foundation</td>
<td>P N Panicker Foundation</td>
<td>20/21-Jun-17</td>
</tr>
</tbody>
</table>
NDLI IDR Workshops

21. Regional (North-III) IDR WS @ IIAS, Shimla, 21/22-Sep-17

22. Regional (East-V) IDR WS @ IIT Dhanbad, 24/25-Nov-17

23. Regional (South-VI) IDR WS @ Goa Engineering College, 18/19-Jan-18

24. Regional (North-IV) IDR WS @ IIT Ropar, 09/10-Mar-18

25. Regional (North-V) IDR WS @ University of Jammu, 06/07-Apr-18
NDLI User Workshops

- National VC Address over NKN, 03-Feb-16
- National VC Address over NKN, 26-Sep-16
- Regional (North-I) User WS @ Jamia Millia Islamia, New Delhi, 20-Oct-16
- Regional (South-I) User WS @ Pondicherry, New Delhi, 16-Nov-16
- User WS @ SPOC workshop of NPTEL Local Chapter Colleges of East Zone, IIT Kharagpur, 23-Dec-16
- Interaction with Publishers @ P N Panicker Foundation, Trivandrum, 05-Jan-17
- Lecture @ Training Workshop for Librarians’ @ P N Panicker Foundation, Trivandrum, 06-Jan-17
- eduPreneurship @ GES 2017, 04/05-Feb-17
- Regional (South-II) User WS @ Trivandrum, 20-Jun-17
- Regional (North-II) User WS @ Directorate of Public Libraries, Jammu, 11-Dec-17
- eduPreneurship @ GES 2018, 03/04-Feb-18
NDLI International Event


- Themes
  - Digital Library Technologies
  - Standards and Interoperability
  - Search and Information Retrieval
  - Designing for the User
  - Access & Rights
  - World Digital Libraries

- Participating Libraries, Projects
  - Europeana Foundation (EU, The Netherlands)
  - National Library of New Zealand (DigitalNZ),
  - National Library of Australia (TROVE),
  - Tainacan Project (Brazil),
  - German Digital Library,
  - National Library of The Netherlands,
  - National Library of South Africa,
  - National Library of Nepal, and
  - British Library (UK)
  - Google Scholar
  - Microsoft Academic
  - Participants from Belgium, Canada, USA, Bangladesh

**22 speeches spread over 9 sessions and 4 panel discussions, 30 speakers from over 12 countries**
NDLI National Events

- ETAL 2015: National Seminar on *Emerging Trends in Academic Libraries* @ IIT Kharagpur, 21-Aug-15
- OSSLM 2016: National Workshop for *Open-Source Software for Library Management* @ IIT Kharagpur, 13/18-Jun-16
- OSSLM 2017: National Workshop for Open-Source Software for Library Management @ IIT Kharagpur, 12/17-Jun-17
- NDLI Copyright Workshop @ IIT Kharagpur for Project Staff, 07-Nov-17
- NDLI Copyright-DigitalRights-Partners Workshop @ IIT Kharagpur, 09/10-Feb-18
NDLI Participations

- Workshop @ INDEST Meet @ Mohali, 29/30-Apr-15
- ETAL 2015: National Seminar on *Emerging Trends in Academic Libraries* @ IIT Kharagpur, 21-Aug-15
- ETD 2015 India @ JNU New Delhi, 05/06-Nov-15
- 4th NKN Annual WS @ JNTU Hyderabad, 21/22-Jan-16
- PLANNER 2016 [Embedded WS] @ NEHU, Shillong, 09-Nov-16
- ICDL 2016 [Embedded WS], New Delhi, 13/16-Dec-16
- Digital Archive Inauguration @ Presidency University, 16-Jan-17
- Summer School on *Document Analysis: Document Informatics 2017*, CEERI, Pilani, 23/28-Jan-17
- National Consultation on the National Mission of Reading @ P N Panicker Foundation, Trivandrum, 01/02-Mar-17
- MZU-ICLIS-2017: International Conference on Library and Information Services in Knowledge Society @ Mizoram University, 01/03-Mar-17
- Consultative Meeting with Europeana Library @ The Hague, The Netherlands, 16-Mar-17
- SpringerNature Metadata Advisory Meeting @ London, UK, 21/23-Mar-17
- Conference on *Open Access – The Road to Freedom* @ Society for Information Sciences, CSIR-IICB, Kolkata, 07/08-Apr-17
NDLI Participations

- CALIBER 2017, 4th Conference on Re-Envisioning Role of Libraries: Transforming Scholarly Communication, Anna University, Chennai, 02/04-Aug-17
- mBillionth 2017 Awards, New Delhi, 04-Aug-17
- Ministry of Road Transport & Highways: Workshop on Strategy, Institutional Framework and Action Plan for Transforming Research and Standardization in the Road Sector in India, 11-Aug-17
- Consultative Meeting with FINNA.FI: National Library of Finland @ Helsinki, Finland, 04-Sep-17
- RightsStatements.org, Steering Committee Meeting The Hague, The Netherlands, 07/08-Sep-17
- IPLC 2017: 3rd Indian Public Libraries Conference, New Delhi, 03/05-Oct-17
- IWTPLA : International Workshop cum Training Programme on Library Automation, SRFTI, 13/18-Nov-17
- DHDS 2018: International Seminar on Digital Humanities and Digital Societies in the Contemporary World, Calcutta University Kolkata, 18/19-Jan-18
- IS-RPLS-DRS: International Seminar on Rejuvenating Public Library Services through Digital Reference Sources, Jadavpur University, Kolkata, 22/23-Feb-18
NDLI Live:
https://ndl.iitkgp.ac.in/

NDLI on Facebook:
https://web.facebook.com/NDLIndia/

NDLI on YouTube:
https://www.youtube.com/watch?v=LEwAyHGKeLw
https://www.youtube.com/watch?v=qIZB-G9ywFo
https://www.youtube.com/watch?v=UCoJwfPrQFs&t=115s

NDLI Project:
http://www.ndlproject.iitkgp.ac.in/ndl/
Publications


Status ...

- Items: 12M+
- Metadata: Version 1.0 of Standard Published
- Sources: 149 (IDRs: 100+)
- Registered Users: 2.2M+
- Daily Website Hits: ~12K
- Android App Download: 5L+
- Daily Android / iOS Hits: ~25K
- Registered User Institutions: ~6K
- Languages: 20+
- Learning Resource type: 15+
- Subject domain:
  - Most of the major educational areas (except medical and law)
- Educational Level: School Level (Class-I to XII), UG and PG
Status ...

- **Nature of Sources: 149 (IDRs: 100+)**
  - Featured: 7
    - DLI, Shodhganga, Shodhgangotri, Spoken Tutorial, SNLTR, OECD, Satyajit Ray Archives, JEE / GATE Questions & Solutions, South Asia Archives, WeL
  - Crawled Repositories: 5
    - NPTEL, Khan Academy, PhET, Project-OSCAR, LibriVox (audio books), PubMed
  - Manually-annotated sources: 6
    - NCERT, CBSE, Boards of WB, Tripura, AP, Karnataka, Kerala, Maharashtra
  - MARC data from Publishers: 2
    - CRC Press, Springer
  - Through API: 1
    - INFLIBNET N-LIST

- **Upcoming**
  - Integration Underway
    - IEEE Conference Proceedings
    - Various publishers under eSS
  - Exploration
    - UNESCO, Gandhi Heritage Portal, Digital Herbarium (BSI)
Summary

The only thing that you absolutely have to know (may use Google, though), is the URL of NDL:

ndl.iitkgp.ac.in

Rest you find in NDL

Why are you waiting?

- An umbrella over all IRs of India
- User-Centric Design
  - Multi-lingual Indic Interface
  - Multi-faceted Search
  - Multi-modal Filters
  - User Experience Tracking for Personalization
- Rich Set of Contents
  - National Licensing
  - Domain / Usage-focused Verticals
- Metadata Engineering
  - Metadata Standard
  - Open Source Toolkit
- NDLServices
  - Open APIs for 3rd party development
- Platform for Educational Ecosystem where all stakeholders participate, contribute and benefit
- Spearheads **NDL Movement**