

IASSIST Conference 2016 - Bergen, Norway

Embracing the 'data revolution': opportunities and challenges for research

May 31-June 3, 20016

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Paper Proposal - Track 1: Research Data Management

Research Data Management: A practical approach to overcome challenges to boost research

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Keywords:

Research data management, Knowledge Organisation Systems, Metadata,
Policy framework, Information Retrieval, Best Practices,

Abstract

With the advent of new technologies integrated with research data management tools has led to a great revolution in the automation and digitization in libraries to provide innovative services that cater to the modern “smart” users’ needs. At the same time, adoption of various policy frameworks for managing the data and workflow systems along with other Knowledge Organisation Systems (KOS) such as Metadata, taxonomies, ontologies that enable the interoperability of research data that enable information retrieval pose challenges to the information professionals.

The expectations of the library patrons are increasing day-by-day, as the required information need to be made available on their fingertips within the short span of time. Within this framework, Research Data Management (RDM) plays a crucial role in the information management and dissemination of research data.

The paper will first present a brief overview of RDM, detailed literature review regarding the RDM aspects adopted in libraries of the world. It will also describe several tendencies concerning management of repository tools for managing research data and also the showcase the associated challenges in implementing the RDM. This will also depict the proper planned training and skill development for all stakeholders by mentors to train both staff and users are some of the issues that need to be considered to enhance the RDM process. An attempt will be tried to depict and present the suitable policies with a policy framework and workflows with adoption of best practices in RDM will boost the research process in an organisation.

This study also aims to showcase the implementation and use of research data management and the process adopted in the Technical Institute of India referring particularly to the Central Library @ NIT Rourkela, Odisha, India.

Finally, the paper will conclude with some remarkable results, regarding the literature review study as well as the case study presented.

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- Research Data Management (RDM): An Overview
- RDM in India
- RDM @ NITR: A Case Study
- Issues and Challenges in RDM
- Opportunities to boost research in HEIs
- Conclusions

Introduction

- The advent of new technologies along with the development of several research data management (RDM) tools has led to a great revolution in the automation and digitization in libraries, which aim to provide innovative value added services to their patrons.
- The adoption of various policy frameworks for managing the data and workflow systems along with other Knowledge Organisation Systems (KOS), such as taxonomies, ontologies etc. that enable the interoperability of research data and enhance information retrieval, pose challenges to the information professionals within the library context.

- The importance of RDM is increasingly recognized from several organizations and institutions around the world, as it plays a crucial role in the documentation, curation and preservation of research data.
 - It is natural that libraries can be considered as a critical stakeholder in the RDM landscape.
- Globally, there are several cases for libraries participating in research projects, in order to enhance research data retrieval and dissemination.
 - Their main aim is to present practices and issues regarding the management of the research data as a part of the research work.
 - Also, an important target for the libraries has been to gather information and learn about research data and processes related to it.

Research Data Management: An Overview

Research Data Management (RDM) concerns the organisation of data, from its entry to the research cycle through to the dissemination and archiving of valuable results. It aims to ensure reliable verification of results and permits new and innovative research built on existing information*.

The RDM process as follows**:

- *Create* data and plan for its use,
- *Organise*, structure and name data,
- *Keep* it – make it secure, provide access, store and back it up,
- *Find* information resources and *share* with collaborators and more broadly, publish and get cited.

*Whyte, A., Tedds, J. (2011). Making the Case for Research Data Management. DCC Briefing Papers. Edinburgh: Digital Curation Centre. Available at: <http://www.dcc.ac.uk/sites/default/files/documents/publications/Making%20the%20case.pdf>

**University of Leicester. What is Research Data Management. Available at: <http://www2.le.ac.uk/services/research-data/rdm/what-is-rdm>

RDM in India

KRISHI
KNOWLEDGE BASED RESOURCES INFORMATION SYSTEMS HUB
FOR INNOVATIONS IN AGRICULTURE
(ICAR RESEARCH DATA REPOSITORY FOR KNOWLEDGE MANAGEMENT)

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Information Systems

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- Bio-informatics Resources
- Crop Specific Knowledge Resources
- DataBases
- Experimental Data Resources
- Genetic Resources Portals
- Geo Portal
- Inter Portal Harvester
- Krishi Vigyan Kendras
- Management Information Systems
- Museums
- Other Databases and Portals
- Statistical Learning and Computing Resources
- Technologies and Knowledge Resources
- Zonal Technology Management and Business Planning & Development Unit

Experimental Data Repository

ICAR Geo-Portal Repository

Observation Data Repository

Publication Repository

Survey Data Repository

Technology Repository

Publication Repository

Survey Data Repository

Technology Repository

ICAR Geo-portal

Observational Data Repository

Publication Repository

Survey Data Repository

Technology Repository

KRISHI - Knowledge based Resources Information Systems Hub for Innovations in agriculture, is an initiative of Indian Council of Agricultural Research (ICAR) to bring its knowledge resources to all stakeholders at one place. The portal is being developed as a centralized data repository system of ICAR consisting of Technology, Data generated through Experiments/ Surveys/ Observational studies, Geo-spatial data, Publications, Learning Resources etc.

416 visitors
May, 01st - May, 31st

Click to see details

krishi.icar.gov.in/#

Krishi (Knowledge based Resource Information Systems Hub for Innovations in Agriculture)

Indian Council of Agricultural Research (ICAR), New Delhi
<http://krishi.icar.gov.in>

Six Sub-Repositories

- Technology Repository
- ICAR Geo-Portal
- Experimental Data Repository
- Survey Data Repository
- Observational Studies Data Repository
- Publication Repository

ICAR Guidelines:

<http://krishi.icar.gov.in/PDF/ICAR%20Guidelines%20for%20Data%20Management%20in%20ICAR%20Institutes.pdf>

RDM in India

ICSSR DATA SERVICE

Indian Council of Social Science Research

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DATASETS

- Debt & Investment
- Domestic Tourism
- Education Dataset
- Enterprise Survey
- Employment & Unemployment
- Housing Condition
- Household Consumer Expenditure
- Health Care

DEBT & INVESTMENT :

The debt and investment survey conducted by the NSS for generating average value of assets, average value of outstanding debt per household and incidence of indebtedness, separately for the rural and urban sectors of the country, for States and Union Territories, and for different socio-economic groups. These indicators are amongst the most important measures of the indebtedness of the respective domains of the population and are crucial inputs for estimation of credit structure.

USEFUL LINKS

→ REGISTER || FAQs || LOGIN || CONTACT US

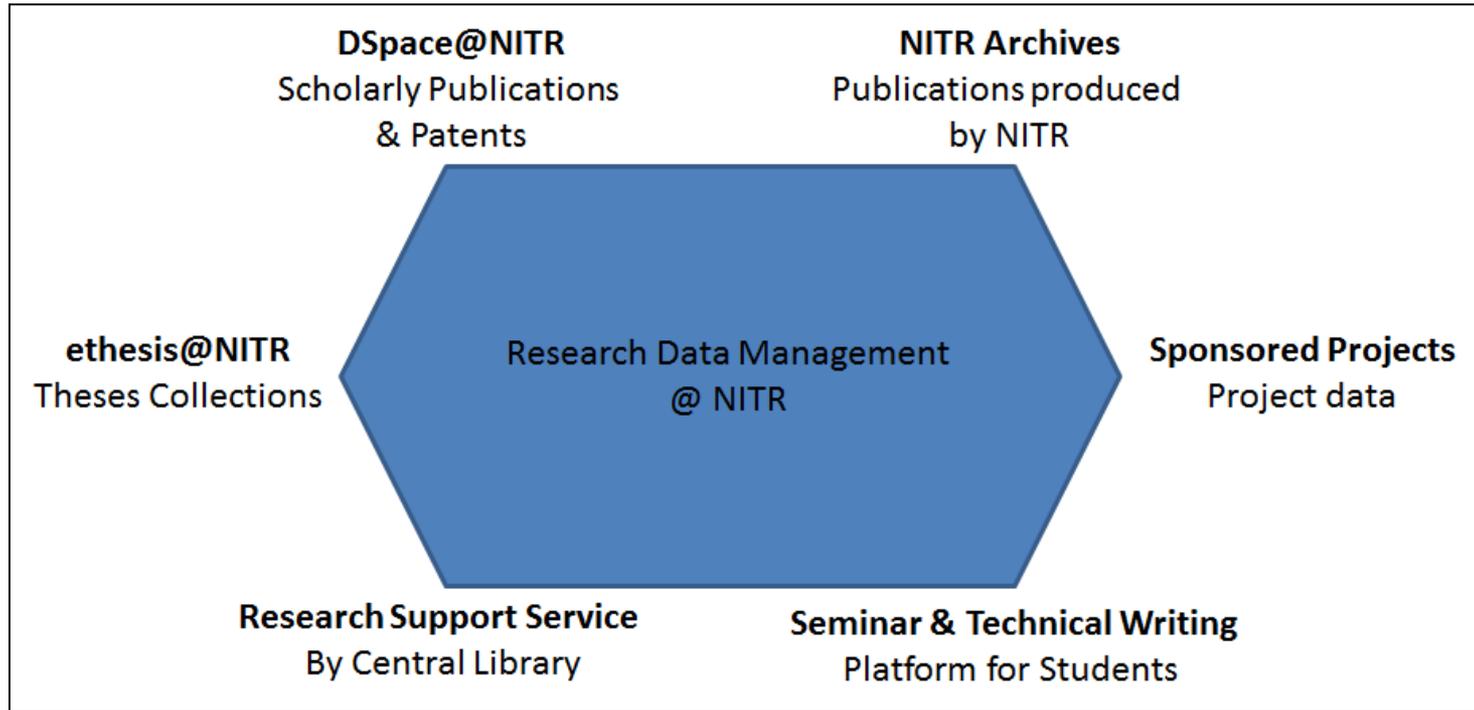
ICSSR Data Service

<http://www.icssrdataservice.in/>

- The “ICSSR Data Service” is culmination of signing of Memorandum of Understanding (MoU) between Indian Council of Social Science Research (ICSSR) and Ministry of Statistics and Programme Implementation (MoSPI).
- Host NSS and ASI datasets generated by MoSPI
- Comprehensive set of statistical datasets in social sciences
- ICSSR Data Service: Policy Guidelines <http://www.icssrdataservice.in/files/ICSSR%20Data%20Service-Policy%20Guidelines.pdf>

RDM @ NITR: A Case Study

The Biju Patnaik Central Library (BPCL) is the central library of the National Institute of Technology Rourkela, Odisha, India.



RDM @ NITR

Institutional Repositories @ NITR

The screenshot shows the DSpace@NITR website. At the top, there is a navigation bar with 'Home', 'Browse', and 'Help' links, a search box labeled 'Search DSpace', and a 'Sign on to' button. Below this is a header banner for 'Biju Patnaik Central Library National Institute of Technology Rourkela, Odisha' with the text 'शोध संग्रह Institutional Repository' and the NITR logo. A green bar below the banner says 'Welcome to IR @ NIT Rourkela'.

The main content area is divided into two columns. The left column features a 'Recent Submissions' section with a blue background. It displays a paper titled 'A 6-Bit 500 MSPS Segmented Current Steering DAC with On-Chip High Precision Current Reference' with a 'See' button. Below the title is a brief abstract: 'This paper describes the design of a 6-bit 500 MS/s segmented current steering digital-to-analog converter (DAC) for telecommunication applications. The DAC is segmented as 4+2, where the 4 MSB bits are implemented in unary and 2 LSB bits are realized in binary architecture. The DAC is biased using an on-chip current reference to minimize the overall deviation in output due to temperature and supply variations. The proposed DAC achieves a maximum DNL and INL of 0.0036 and 0.0023 LSBs, respect...'. Below the abstract is a progress indicator consisting of 16 small circles.

The right column contains a 'Useful Links' section with a blue header and green background, listing links such as 'About NITR', 'BPCL Home', 'ETD @ NITR', 'Open Access to Odia Books', 'Software Vault', 'NPTEL Video Lectures', and 'Search in OAister'. Below this is a 'Submission Guidelines' section with a blue header and green background, listing 'Submission Guidelines', 'SHERPA Copyright', 'Latest Submissions (RSS Feed)', 'DSpace - Help', and 'Contact Us'.

At the bottom, there is a 'Communities in DSpace' section with a 'Discover' filter. It shows a list of communities, with 'National Institute of Technology- Rourkela' selected, showing 2334 items. Other filters include 'Author' (Mishra, S C: 157; Roy, G K: 137), 'Subject' (OFDM: 23; SEM: 21), and 'Date issued' (2010 - 2016: 1214; 2000 - 2009: 923).

DSpace@NITR for the Scholarly publications that includes mainly Book Chapters, Journal Articles and Conference Proceedings.

<http://dspace.nitrkl.ac.in/dspace/>

The screenshot shows the EThesis@NIT Rourkela website. At the top, there is a navigation bar with 'Home', 'About', 'Year', 'Subject', 'Departments', 'Authors', 'Supervisors', and 'Thesis Type' links. Below this is a header banner for 'Biju Patnaik Central Library National Institute of Technology Rourkela, Odisha - 769008' with the text 'EThesis @ NIT Rourkela' and the NITR logo. A green bar below the banner says 'Welcome to ethesis'.

The main content area is divided into three columns. The left column contains a 'Upload your thesis' section with a blue header and green background, providing instructions: 'Instructions to upload thesis are here. Please read before uploading yours'. Below this is a section 'ethesis@nitr is indexed by:' with links to 'Google', 'OAister', 'Scientific Commons', 'BASE', and 'and many other service providers...'. At the bottom of this column is a 'Policies' section with the text 'Submitters, users and preservations policies are here'.

The middle column contains a 'Search Repository' section with a blue header and green background, providing a search box and the text 'Search the repository using a full range of fields. It is advanced search.' Below this is a 'Browse Repository' section with a blue header and green background, providing a search box and the text 'Search the repository using a full range of fields. It is advanced search.' Below this is a 'For queries:' section with the text 'Mr. D.K. Pradhan Biju Patnaik Central Library, NITR' and the email 'Email: bpcl-rl@nitrkl.ac.in'.

The right column contains a 'Search Repository' section with a blue header and green background, providing a search box and the text 'Search the repository using a full range of fields. It is advanced search.' Below this is a 'Browse Repository' section with a blue header and green background, providing a search box and the text 'Search the repository using a full range of fields. It is advanced search.' Below this is a 'Latest Additions' section with a blue header and green background, providing a search box and the text 'View recent items added to the repository'.

At the bottom, there is a 'Powered by' logo for 'eprints'.

E-Theses@NITR is an institutional repository, which includes the Electronic Theses & Dissertations from the academic fraternity

<http://ethesis.nitrkl.ac.in/>

Issues and Challenges in RDM

Halbert suggested the following factors that may hinder the progress of the RDM process:

- Lack of Funding
- Lack of Organizational Structures
- Lack of Professional Preparation
- Lack of Priority among Researchers
- Lack of Institutional Mandates

Halbert, M (2013). Prospects for Research Data Management, In Research Data Management: Principles, Practices and Prospects by the Council on Library and Information Resources (CLIR) Report-160, November 2013, pp.1-15, Available at:

<http://www.clir.org/pubs/reports/pub160/pub160.pdf>

There are several challenges to be taken care of by libraries in order to adopt RDM:

- Adoption of policies, such as archival policies, embargo, access rights, etc.
- User training of library staff
- Training for stakeholders
- Support from stakeholders, such as technical expertise and academic fraternity
- Voluntary submission of publications to the repositories
- Data curation
- Database creation
- Compliance of policies with funding agencies
- Upgradation of features and software
- Culture change
- Change management

Opportunities to boost research in HEIs

Some of the opportunistic elements that can make difference and boost research in HEIs are the following:

- Policy framework
- Adoption of Knowledge Organisation Systems (KOS) Aspects
- Mapping of experts and data/content
- Awareness and re-use of data/content
- Discovery and analysis tools
- Research Support Service by the library

Conclusions

- Research data management is a complex issue involving multiple activities carried out by various actors addressing a range of drivers and influenced by a large set of factors
- There is a tendency that libraries are moving towards developing new institutional RDM policies and services considering it as an important part of their future role.
- Institutional policy development is required as a basis for coordinated action on data management

Thank you!

A decorative graphic at the bottom of the slide consisting of a solid orange horizontal bar. Below this bar, on the right side, are several horizontal lines of varying lengths and colors, including orange and white, creating a layered, graphic effect.