

IR: Knowledge Creation, Knowledge Management and Knowledge Dissemination

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ABSTRACT:

Open access movement and open source software movement plays an important role in creation of knowledge, knowledge management and knowledge dissemination. Scholarly communication and publishing are increasingly taking place in the electronic environment. With a growing proportion of the scholarly record now existing only in digital format, serious issues regarding access and preservation are being raised that are central to future scholarship. Institutional Repositories provide access to past, present and future scholarly literature and research documentation; ensures its preservation; assists users in discovery and use; and offers educational programs to enable users to develop lifelong literacy. This paper explores these aspects on how IR of Cochin University of Science & Technology supports scientific community for knowledge creation, knowledge Management, and knowledge dissemination.

Key Words: Open Access, Knowledge Management, Institutional Repositories

INTRODUCTION: The advancement of Information and communication technology is the open access revolution and the move towards the information and knowledge society highlighted the importance of knowledge and knowledge management. Information and communication Technology improved our ability to create, preserve and disseminate a phenomenal amount of scholarly knowledge. Universities and R&D institutions are considered as learning centers and creating new knowledge. Faculty and scientific communities create new information from the scientific and social facts through experiments and observations. For creating a new knowledge, the scientific community needs the acquisition of information and knowledge from different sources such as primary, secondary sources of information and networked sources of interaction.

Nowadays, large volumes of intellectual outputs are coming out from the academic community and other scientific Laboratories. The scientific community creates research materials and scholarly publications in increasingly complex digital formats, which necessitate a mechanism to aggregate, integrate, preserve and distribute this ever growing treasure of intellectual products. Institutional repositories manage these materials in a professionally maintained archive giving these increased visibility and accessibility over time.

Knowledge creation in universities and R&D institutions is made possible through various intra- and inter-organizational collaborations between the academic and private sectors, and through the establishment of networks for learning. Collaborative knowledge sharing through networks, integration of external and internal knowledge, informal networking such as peer group networks, social networks etc are examples of information acquisition in organizations (Noeth, Andries Johannes 2004).

WHAT IS INSTITUTIONAL REPOSITORY(IR): An institutional repository archives and makes available journal articles, conference papers, working papers, reports and data sets or teaching and learning material such as texts, images, animations, web sites, video or audio files. It can also encourage sharing and collaboration of teaching and learning material and increase the visibility and accessibility of research output. A new strategy that allows universities to apply serious, systematic leverage to accelerate changes taking place in scholarship and scholarly communication, both moving beyond their historic relatively passive role of supporting established publishers in modernizing scholarly publications through licensing of digital content, and also scaling up beyond ad hoc alliances, partnerships, and support arrangements with a few select faculty pioneers exploring more transformative new uses of the digital medium (Lynch, 2003).

A university-based institutional repository is 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. (Lynch 2003)

Why IR IS NECESSARY: An institutional repository (IR) is a set of services for storing and making available digital research materials created by an institution and its community. Repositories support the open access goal of transforming scholarly communication by making it easier for researchers to find and share the results of research, through free and unrestricted on-line availability.

IR supports to identify & aggregate the institutions intellectual output and gray information sources

- Long-term preservation, knowledge organization, and transactions
- Change the mode of scholarly communications
- Enhancing the visibility of the authors, institution, knowledge flow, scientific production
- Making research publications of Science & Technology more easily and freely accessible
- Promote interdisciplinary Research
- Knowledge sharing within the organization and over the globe.
- Provide a cost effective solution for knowledge management, transactions & preservations.
- Improved scholarly communication through inter-operable, open access, IRs
- IR supports the global visibility of an Institution, scientists and increases the citation

IR : CUSAT: Cochin University of Science & Technology (CUSAT) IR is an open access repository powered by DSpace in Ubuntu platform, designed as a place to capture, store, index, preserve and redistribute in digital formats of the intellectual

out put of the faculty, scientists, and scholars of Cochin University of Science & Technology. It was initially funded by Department of scientific Industrial research (DSIR) Govt of India and further supported by University Grants Commission (UGC).

The content of CUSAT Institutional covers

- Ph.D Theses
- Scholarly communications
- Conference proceedings
- Multimedia contents
- E-learning materials
- Audio/Video materials
- Book chapters

IR AND KNOWLEDGE CREATION: IR promotes the networked learning and knowledge sharing, application of information and knowledge, collaborative resource mobilization and resource sharing, encourage new combinations of capabilities that link knowledge creation with application resources; Facilitate access to knowledge resources; Support linkages between other IR of sciences; Industry and institutions support informal networks for knowledge creation and sharing. IR supports to develop a standard conceptual model where in all the faculty and scientists will be able to upload and publish the research outputs for future sustainability. It helps to pool up and consolidate scattered research output of CUSAT in different aspects of Science & Technology.

It promotes interdisciplinary research, cross-repository search service through OAI-PMH interoperability standard protocol. IR supports search service other IR through metadata harvesting Supports added value capabilities for specific groups of users.

IR supports the aggregation and integration of various information resources such as primary, secondary, tertiary, e-books, e-learning materials, gray literature, multimedia contents theses and scholarly communications etc. The OAI-PMH interoperability feature supports the cross-repository service to cross-disciplinary resource sharing and access. IT supports the networked information sources, informal networks through web2.0 and mobile networks DBMS supports the easy and indexed search and information retrieval

Knowledge creation Process

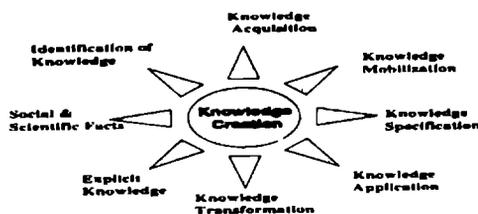


Figure 1

IR & KNOWLEDGE MANAGEMENT: Knowledge Management is the discipline of enabling individuals, teams and entire organizations to collectively and

systematically create, share and apply knowledge, to better achieve their objectives"(Lew Platt, Knowledge management, definitions Wikipedia)

Knowledge management begins with the creation of electronic systems to map and store the intellectual capital of an organization, with search and retrieval interfaces for users. However traditional KM has moved well beyond the systematic collection, archiving and retrieval of information. New trends in KM are dialogue, relationship-building and adaptive learning through constant interaction with users, who have their own knowledge and perspectives to contribute.

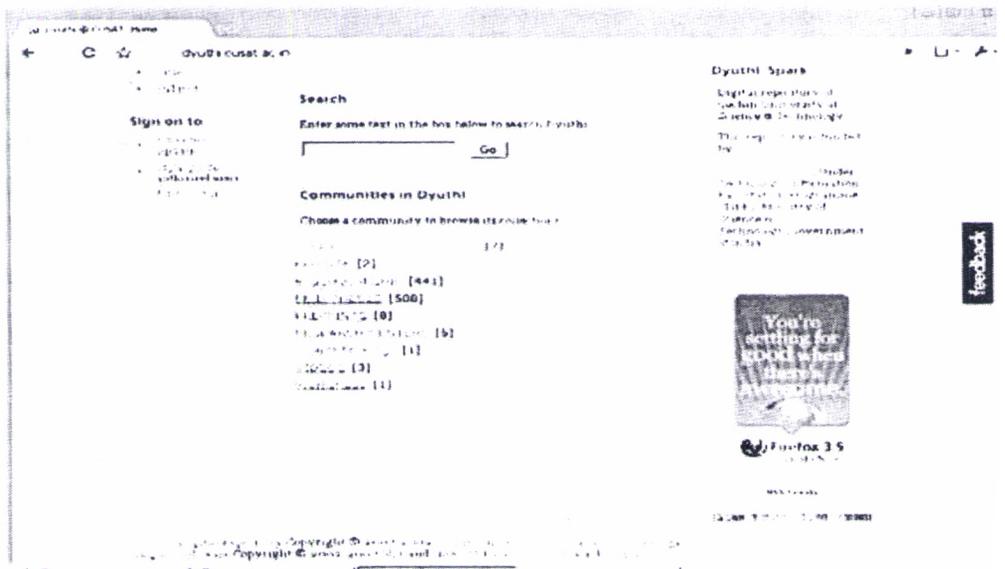
Basic Steps

- Identification of knowledge,
- Mobilization of knowledge,
- Aggregation of knowledge,
- Specification of knowledge,
- Application of knowledge
- Transformation of knowledge.

These are basic features of a knowledge management system. IR of CUSAT supports, identification, capturing, mobilization, specification or coding of knowledge and proper transactions and dissemination of knowledge.

WAYS OF ORGANIZING CONTENTS: Each repository service organizes the contents in a way to suit the institutions' unique culture and academic organizations. Many universities organize according to academic research centers or departments. Basically DSpace Software supports organizing of knowledge into Communities, each community having its collections, collections have items and item contains bit streams. Each community, collection, item, Bit streams have metadata. The community may be formal community, subject community, groups etc.

KNOWLEDGE ORGANISATION IN CUSAT IR (Figure 2)



posters, peer group discussions etc. It is an interaction between knowledge producers and users.

Institutional repository supports the sharing of institutional knowledge within the organization or locally or globally. IR disseminates knowledge through intranet, Internet, OAI-PMH, web2.0, google scholar, and mobile access. It also supports the informal networks and social networks for Knowledge dissemination. OAI-PMH interoperability protocol standards provide the cross-disciplinary resource sharing between the repositories for creation of new knowledge.

Knowledge Creation, Management and Dissemination Model of CUSA F IR

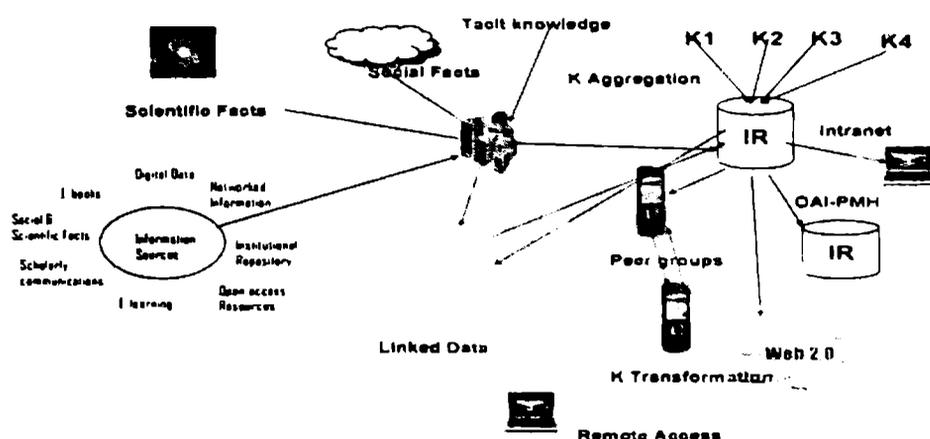


Figure 4

CONCLUSION: The scope of an IR is not limited to the preservation of digital assets of institutions. It supports the knowledge creation, management and dissemination locally and over the globe. It supports enhance the visibility institutional knowledge output in a structured, organized way and supporting for creation of new knowledge and dissemination. It enhances the cross-disciplinary knowledge creation and sharing. It is very essential for encouraging the Institutional Repositories in university level, R&D level and corporate level etc.

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DSpace is digital asset management software jointly developed by Hewlett-Packard and MIT Libraries, and it is arguably one of the appreciated open source software deployed worldwide for building digital institutional repositories that captures, stores, indexes, preserves, and redistributes content in digital formats. DSpace facilitates the institutions and universities operate an open access and interoperable institutional repository at the local level. It is also intended to serve as a repository back up for future development to address long term preservation and remote/online access issues. [DSpace Wiki].

It supports all types of digital materials including text, images, video and audio files. Possible content includes scholarly articles and preprints, technical reports, working papers, conference papers, books, blogs, e-theses, multimedia publications, Datasets: statistical, GIS, etc. Images visual, scientific, etc.; audio files, video files, teaching & learning materials, bibliographic datasets, Web pages etc.

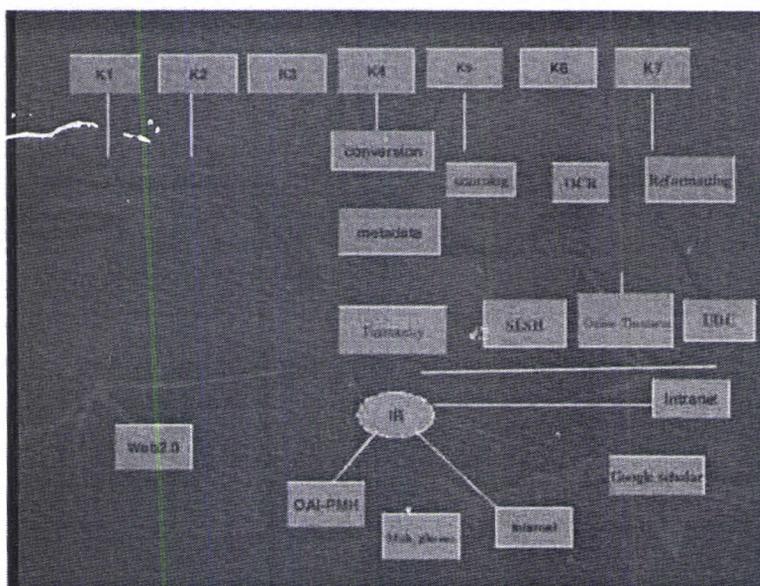


Figure 3

DSpace IR organizes the knowledge contents wise by communities, each community has separate sub community for further grouping within the sub community. Collections of IR supports to aggregate the intellectual and institutions contents, and accept all types of formats for showcasing within the organization over the globe. IR facilitates flexible metadata forms for easy sharing of information, indexed for search and retrieval process. Web service supports the networked data sharing; OAI-PMH supports the cross disciplinary search and retrieval.

IR & KNOWLEDGE TRANSACTION: Any interaction that shares or transfer knowledge is called knowledge transactions (KT). It can be oral, gestures,

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