# Contribution of ROAR and OpenDOAR in Open Access Movement and Universal Access to Scholarly Information

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## Abstract

*Open Access initiative (OAI) is the wide discussed subject in the world of information and communication technology. The open access philosophy rapidly became popular and a number of universities and research institutions spontaneously came forward to provide open access to their scholarly communications, research outcomes and electronic journals. In the present paper, the meaning, definition and the present scenario of the Open Access initiative, as well as the problems and improvement of the Open Access initiative has been discussed. Contribution of ROAR and OpenDOAR in the field of Open Access initiative has been discussed in detail. The data collected from the secondary sources of information and presented in a tabular form for easy understanding of the LIS professionals and masses to know the importance of the Open Access initiative for giving access to scholarly communications for wider audience.*

**Keywords:** Open Access Repositories, Institutional Digital Repositories, ROAR, OpenDOAR

## 1. Introduction

Advancement of 'knowledge', its growth and wider unrestricted dissemination across national and geographical borders through generations, is the driving force for furtherance of human civilization and human welfare. The 21st century promises to be the century of democratization of nations, modernization of human societies and proliferation of knowledge and technology – a century of widespread scientific advancements – a century of innovations and – all these dimensional changes essentially resting on the edifice of unprecedented development in the field of information storage and dissemination; and 'open access' to information and knowledge.

The issue of unrestricted access to scholarly outputs was in discussion and active consideration of the academicians and research scholars since the 1960s. Gradually it developed into a worldwide movement and the movement picked up momentum with the introduction and wide use of the Internet, emergence of digital publishing, and holding of three successive summits on Open Access in Budapest, Bethesda and Berlin.

With popularization of the Open Access initiative, many Open Access repositories were established in the different parts of the world including India; the leading among them are the ROAR and OpenDOAR which are now championing this movement throughout the world. Here we shall briefly dwell on the philosophy of open access; the relation of open access movement with the establishment of open access repositories; and the salient features of ROAR and OpenDOAR.

## 1.1 Open Access Initiatives: International and National Scenario

### 1.1.1 Definition of Open Access

The term 'Open Access' (OA) broadly refers to the accessibility of various documents, research outputs and other literature free of any charges and having a fewer restrictions on their use, citation, reproduction and onward transmission. The thrust of OA is maximization of knowledge and its optimum dissemination.

### 1.1.2 Evolution of Open Access Movement

The Open Access Initiative (OAI) was a spontaneous outcome of the need and desire of the scientists, scholars and academicians to put their research findings and intellectual output to wide and unrestricted access; and the movement "traces its origin at least back to the 1960s". It gained momentum in early 1990s with popular use of the Internet, consequent upon which, professional associations, learned societies, and academic institutions started putting their intellectual output for Open Access. The movement gained acceleration with the dawn of the new millennium. The Open Society Foundations convened a meeting of diverse academic disciplines from many nations, in Budapest, Hungary on December 1-2, 2001 to accelerate progress in the international effort to make research article in all academic fields freely available; and to devise strategies for serving the interests of research, researchers, and the institutions and societies that support research; and put their intellectual output to open access and to make open-access publishing economically self-sustaining.

The meeting published a statement named, 'Budapest Open Access Initiative', on February 14, 2002. Including the initial participants, the statement has till now (January,2016) been signed by 5930 individuals and 833 organizations.

On April 11,2003, another meeting of 24 people was held to stimulate discussion within the biomedical research community on how to proceed, as rapidly as possible, to the widely held goal of providing open access to the primary scientific literature at the Howard Hughes Medical Institute in Chevy Chase, in the vicinity of Bethesda, Maryland, USA. The proceedings of the meeting was published on June 20,2003, known as the 'Bethesda Statement on Open Access Publishing'.[6] It spells out significant concrete steps that all relevant parties – including scientific research organizations, scientists, publishers and librarians – can take to promote the rapid and efficient transition to open-access publishing.

In October,2003, The Max Planck Society of Germany and the European Cultural Heritage Online (ECHO) convened a meeting of international experts at Harnack House in Dahlem District of Berlin with the aim of developing a new web-based research environment using the OA paradigm as a mechanism for having scientific knowledge and cultural heritage accessible worldwide.

As an outcome, reputed research, scientific and cultural institutions issued and signed the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities" on October 22, 2003.

This Declaration largely corroborates the BOAI statement and has till now (January 14, 2016) been signed by 538 organizations: universities, foundations, libraries, museums, research

institutions, learned societies and associations, including the IFLA.

## 2. Essence and Thrust of Open Access

The essence of OA is: wide, free, and unrestricted dissemination of human knowledge treasure; its transmission to the poor and rich alike; and in doing so, taking effort to bridge up the existent 'information divide' and; offering opportunity to people, the world over, to have immediate access to newly developed knowledge and thereby building up new innovative ideas upon that; and finally to preserve all these treasure for posterity; and the entire process be harnessed by world-wide networking.

### 2.1. Forms and Sub-Species of Open Access

Following the Berlin Declaration, OA initiative sets up "two basic forms of implementation …with a focus on academic journals:

❖ the 'green road': deposit of copies of already published, peer-reviewed research articles in university or research institute repositories;

❖ the 'golden road':

♦ publication by Open Access publishers or in Open Access journals, financed either upfront through publishing fees (e.g. BioMed Central) or through public funds (e.g. Digital Peer Publishing Initiative DPPI);

♦ the parallel publication of books in printed form (for a fee) and in an electronic version (free access) in Open Access publishing houses, in particular university presses."

A good number of institutions and funders have created necessary funds to boost up the OA movement and cover the APCs. A list of grant awarding bodies that explicitly permit funds to be used for this purpose is maintained on the BioMed Central website. The gold OA journal contents generally come through peer review, as in the case of conventional journals. It may be noted that the repositories usually don't perform peer review.

### 2.2 Scope of Open Access

Though OA was initially motivated towards disseminating scientific and healthcare related research output; today it encompasses almost all branches of knowledge. The scope of OA, today, is not limited to:

❖ publicly-funded research, it includes privately-funded and unfunded research also;

❖ present and future publications, but includes past publications as well;

❖ born-digital work, but includes work digitized from print, microfiche, film, and other media; and

❖ text, but includes data, audio, video, multimedia, and executable code.

Open Access contents consist of: peer-reviewed research articles; un-referred preprints; theses, dissertations, conference presentations (texts, slides, audio, video); research data, government data, source code; archival records and manuscripts; images (artworks, photographs, diagrams, maps); teaching and learning materials, textbooks; digitized print works; scholarly monographs; and newspapers, novels, stories, plays, and poetry[14]

### 2.3 Motivation of Open Access

The motivations for OA are many and varied. In the first place, since mid 20ᵗʰ century, there has been a rapid proliferation of knowledge that precipitated a big demand for scholarly journals.

Secondly, "when most peer-reviewed research journals are toll access, a pricing crisis entails an access crisis." Before popularization of OA, all such journals were available only against toll and "even today [2012] about three-quarters of peer-reviewed journals are toll access.", which entails an access gap.

Thirdly, with the rising prices of the journals, academic libraries started tending towards a cut in their book budget. "Because academic libraries now buy fewer books, academic book publishers now accept fewer manuscripts. [The] result is that the journal crisis, concentrated in the sciences, has precipitated a monograph crisis, concentrated in the humanities."

Fourthly, in conventional publishing, the publishers realize charges for accessing the journals, on the reasoning of their adding value to it by bearing the publication cost. But in reality, other stakeholders in the process, the authors, editors, reviewers "add far more value than publishers. Among these five value-adders- authors, editors, referees, funders, and publishers-publishers add the least value and generally demand the ownership rights." This is altogether an uneven situation.

These factors, along with the authors' interest in putting their intellectual output wide open, created an impetus for the OA-initiative. It was enhanced by the evolving model of digital delivery of academic contents and slowly gave rise to a voice for 'digital equality'.

In July 2012, the Directory of Open Access Journals (DOAJ) reached the 8,000-title milestone, while the Directory of Open Access Books (DOAB) lists more than 1,100 titles from over 25 contributing publishers. Furthermore, there are currently 609 societies publishing 702 fully OA journals.

## 2.4 Wrong Interpretations of Open Access

There are certain mistaken interpretations of OA. "It is not self-publishing, nor a way to bypass peer-review and publication, nor is it a kind of second-class, cut-piece publishing route", as many people understand it. There are some other misunderstandings also; the real situations as regards them are as follows:

❖ OA is not a reformist movement; it is not opposed to copyright provisions.

❖ OA doesn't reduce author's recognition; author's consent is very much required for OA. OA doesn't reduce author's academic freedom. Author is at liberty to submit his work elsewhere for publication.

❖ OA doesn't bypass the plagiarism rules. In digital publication, it's rather easier to detect plagiarism.

❖ OA doesn't stand in the way of traditional publications, directly or indirectly. It attempts for widest possible, restriction-free access; it doesn't claim to provide universal access, because, certain access barriers like, censorship, language and connectivity will always remain.

## 3. Open Access Publishing

In OA, an author can go for self-archiving. "Current publisher policies on self-archiving and copyright are detailed on the SHERPA project website at Nottingham University. Many reputed traditional publishers are gradually tending towards OA publishing.

## 4. Open Access Repositories

OA repositories or OA archives are collection of research findings, intellectual outputs and other academic contents in digital form, deposited by the

authors, their affiliating institutions, funders or publishers, for the purpose of wide dissemination. To access repository contents, specialized search engines like, Google may be used. OA repositories may be hosted by universities or research organizations and may be multi-disciplinary or subject-specified (such as 'arXiv' for Physics are related disciplines).

## 4.1. Growth of Open Access Repositories

The pace of growth of the OA Repositories world-wide can be comprehended from the following statistics of repositories enlisted with OpenDOAR. If we draw a comparison of the year-slabs, 2001 to 2008 and 2008 to 2016 (distributing the 21$^{st}$ century period in two parts), the growth statistics of OA-repositories stands as under:

The statistics show that, OA movement is gaining wide popularity in Asia and Africa with passage of time. Asia's share is 20% of the world's total repositories as on 2016. India has 71 repositories (2.4% of the world and 12% of the Asian total).

## 4.2. Challenges for Setting up Open Access Repositories

An OA-repository generally faces certain challenges in its setting and operation.

❖ In the first place, since OA initiative is a comparatively new concept compared to age-old publication model, OA repositories faces challenges in procuring scientific and scholarly papers. In most cases, such repositories commence operation with the scholarly contents of the faculty members, researchers and students of the host institution.

❖ The second challenge is to convince the author community about the usefulness of OA.

❖ Thirdly, many authors so expect that OA publications should beget the similar recognition and the same 'impact factor' just as a reputed print journal. The 'impact factor' denotes the number of citations made from the

**Table 1: Growth of OA repositories in the World 2001-2008 and 2008-2016**

| Geographical Area | As on April, 2008 | | As on February, 2016 | |
|---|---|---|---|---|
| | No. of repositories | % | No. of repositories | % |
| Europe | 548 | 49 | 1344 | 44.6 |
| North America | 338 | 30 | 571 | 18.9 |
| Asia | 117 | 10 | 599 | 19.9 |
| Australasia | 66 | 6 | 66 | 2.2 |
| South America | 44 | 4 | 267 | 8.9 |
| Africa | 13 | 1 | 133 | 4.4 |
| Central America | 1 | 0 | 16 | 0.5 |
| Others | 1 | 0 | 19 | 0.6 |
| Total | 1128 | | 3015 | |

content. Young scholars and academicians value it much, because this helps them in getting better career choice. A professional system of measuring the impact factor is yet to be established in OA model.

❖ Fourthly, there exists the deficiency of necessary funds and trained manpower required for setting up such repositories particularly in the developing countries.

## 4.3. Establishment of OA Repositories: Bearing on OA Movement

'Open access movement' and 'establishment of repositories' are inter-twinned subjects – one provides for the philosophy, whilst the other offers the platform. The OA movement has already assumed a significant role in scholarly communications. The movement has been instrumental in bringing benefits to the academic community, scientists and research scholars, and the people of the world at large by promoting the information flow and by globalizing the knowledge. Universities and research institutions are, therefore, initiating development of digital repositories of their institutional output. Such a repository is more than a simple document storage, as it uses metadata to enable the users to find suitable materials. (Barker, James & Knight, 2004)

The Registry of Open Access Repository Mandates and Policies (ROARMAP) is an initiative of the ROAR, which comprises of a registry configuring the mandates and policies regarding OA, adopted by various universities, research institutions and funders. As of 28 November 2015, ROARMAP registers 757 Policies, the continental distribution of them is as follows:

**Table 2: Continental-distribution of OA Policy-adoption**

| Continent | No. of OA Policies Registered |
|-----------|------------------------------:|
| Africa | 19 |
| Americas | 195 |
| Asia | 44 |
| Europe | 459 |
| Oceania | 40 |
| Total | **757** |

The distribution by various types of organizations who have registered OA policies is as follows:

**Table 3: Types of organizations adopting OA-Policy**

| Type of the Organisation | Policies |
|--------------------------|---------:|
| Funder | 79 |
| Funder and Research Organisation | 54 |
| Multiple Research Organisation | 8 |
| Research Organisation (university or research institute) | 543 |
| Sub-unit of research organization (department, faculty or school) | 73 |
| Total | **757** |

The ROARMAP provides the facility of registering a new policy by creating an user id and also provides the facility of searching the database of policies by various search options like, country, policymaker type, policymaker name, policy adoption date, source, content-type, and so on. 14 Indian organizations have so far registered their policies with ROARMAP. Certain details of these organizations is depicted below.

**Table 4: Indian Organizations, Registering OA-Policy**

| Name of the organization | Content type specified |
|---|---|
| Bharathidasan University | Peer-reviewed manuscripts, ETDs |
| CGIAR | Peer-reviewed manuscripts, Books, Book sections |
| Council of Scientific & Industrial Research | Peer-reviewed manuscripts, ETDs |
| Dept. of Biotechnology, Science & Technology, Ministry of Science & Technology | Peer-reviewed manuscripts |
| International Crop Research Institute for the Semi-Arid Tropics | Peer-reviewed manuscripts |
| IIT Hyderabad | Peer-reviewed manuscripts |
| ICAR | Peer-reviewed manuscripts, ETDs, Books |
| Indian Institute of Horticultural Research, Bengaluru | Peer-reviewed manuscripts, ETDs, |
| MS University | |
| Madurai Kamaraj University | |
| Mahatma Gandhi University | ETDs |
| National Institute of Oceanography | Peer-reviewed manuscripts |
| NIT Rourkela | Peer-reviewed manuscripts, ETDs, |
| National Knowledge Commission | Peer-reviewed manuscripts |

European universities and institutes have registered highest number of OA-policies (60.63%), followed by the Americans (25.76%), which is indicative of the fact that, the universities and research institutes in Asia, Africa and Oceania (constituting 13.61% in aggregate) are to more intensively develop systems for building collections of digital resources and initiate open access of these resources, by formulating appropriate policies.

India is forerunner amongst the Asian countries in adopting OA-policies, contributing 31.81% of the Asian-share. In respect of OA policy-initiatives, India (14) is followed by Indonesia (8), Japan (5), China (4), China-Hongkong (3), Singapore (3), Azerbaijan (2), Kazakhstan (1), Taiwan (1), Vietnam (1), Pakistan (1) and Saudi Arabia (1) respectively.[28]

## 5.0 Registry of Open Access Repositories (ROAR)

Registry of Open Access Repositories is dedicated to facilitate and promote the 'OA Movement' by providing up-to-date information about the country-wise growth and status of the repositories throughout the world. OA initiatives have a direct impact in promoting and conducting the research procedures by making the required information available to the academic and research communities. Registry of Open Access Repositories is a constituent of the EPrints network. The Registry is hosted at the University of Southampton, UK. The Registry is funded by JISC.

## 5.1 E-Prints Network

E-Prints is powered by School of Electronics and Computer Science of the University of Southampton. It offers a number of services like, E-prints for Open

Access, Eprints for Education, E-prints for Research Data, Building and hosting Repositories, and Training.  E-prints Software is a free software, available under License GNU GPL3.0, of GNU Operating System, a Free Software Foundation (www.gnu.org/licenses/gpl-3.0.html)., which confers freedom to share and make suitable changes to the software. The first version of the Software, EPrints2.0 [Gutteridge, Christopher] was released in 2002. The latest version, Eprints 3.3.14., released in April, 2015 is the 66<sup>th</sup> version. EPrints Software has been downloaded 60,209 times till 26<sup>th</sup> November, 2015 since February, 2007 .

European universities and institutes hold the highest number of repositories (40.01%), followed by the North Americans (24.59%) and the Asians (19.95%); the other continents collectively hold 15.45% of the repositories.

## 5.2    Continental Wise Distribution of OA Repositories

Continental distribution of the repositories is:

**Table-5: Continental Wise Distribution of  OA Repositories**

| Continent | Repositories | Percentage |
|---|---|---|
| Africa | 115 | 3.29 |
| Asia | 697 | 19.95 |
| Europe | 1398 | 40.01 |
| North America | 859 | 24.59 |
| Oceania | 99 | 2.83 |
| South America | 326 | 9.33 |
| **Total** | **3494** | **100.00** |

### 5.3 Country Wise Distribution of Open Access Repositories in Asia

Country-wise distribution of the Asian repositories is (Table-6) :

**Table-6: Country-wise distribution of Asian repositories**

| Country | Repositories | Country | Repositories |
|---|---|---|---|
| Armenia | 2 | Lebanon | 1 |
| Azerbaijan | 4 | Malaysia | 36 |
| Bangladesh | 10 | Nepal | 3 |
| China | 90 | Pakistan | 2 |
| Georgia | 1 | Philippines | 10 |
| Hong Kong | 7 | Saudi Arabia | 6 |
| India | 103 | Singapore | 6 |
| Indonesia | 76 | South Korea | 35 |
| Iran | 8 | Sri Lanka | 1 |
| Israel | 1 | Syria | 1 |
| Japan | 157 | Taiwan | 69 |
| Kazakhstan | 3 | Thailand | 7 |
| Kyrgyzstan | 2 | Turkey | 56 |
| | | **Total** | **697** |

Among the Asian countries, Japan tops the list holding 22.53% share, followed by India (14.78%), China (12.91%), Indonesia (10.90%), Taiwan (9.90%), Turkey (8.03%), Malaysia (5.16%) and South Korea (5.02%). The rest of the 18 countries collectively hold 10.77% share, having 75 repositories in aggregate.

### 5.4 Distribution of Repositories by Types of Repositories

Distribution of repositories by Repository-type is (Table-7):

**Table-7: Repository-type distribution of Repositories**

| Repository Type | Repositories |
|---|---|
| Research Institutional or Departmental | 2772 |
| Research Multi-institution Repository | 79 |
| Research Cross-institutional | 264 |
| e-Journal/Publication | 113 |
| e-Theses | 294 |
| Database/A & I Index | 58 |
| Research Data | 26 |
| Open and Linked Data | 24 |
| Learning-Teaching Objects | 60 |
| Demonstration | 20 |
| Web Observatory | 1 |
| Others | 387 |
| **Total** | **4098** |

It is evident from the statistics that,

1. The OA movement has given tremendous support to research initiatives and dissemination of scholarly communication.

2. Open Access E-Journals and E-Theses are gradually gaining popularity.

3. Open Access Learning and Teaching objects are considerably being used which shows the popularity of the Distance mode of education in particular.

## 5.5 Distribution of Repositories by the Use of Software

Various Software used by the repositories are (Table 8):

Out of a total of 3469 Software in use, DSpace is used in 1608 repositories (46.35%), followed by E-Prints 578 (16.66%) and Bepress 384 (11.07%); 899 repositories (25.92%) use various other Software (538 types)).

## 5.6 Open Access Initiatives in India in terms of OA Repositories Registered

110 repositories in India are registered with ROAR (3.15% share of world population), out which some were registered as back as in 2004 and 2005. The first in the row was the Librarians' Digital Library, which was followed by Indian Institute of Science, Bangalore; Indian Institute of Astrophysics; OpenMed; National Chemical Laboratory, Pune; NIT

**Table-8: Use of Repository Software**

| Repository Software | Number of Repositories | Repository Software | Number of Repositories |
|---|---|---|---|
| ARNO | 4 | HAL | 23 |
| Bepress | 384 | i-Tor | 1 |
| CDS-Invenio | 20 | Keystone DLS | 1 |
| Content-DM by OCLC | 9 | MiTOS | 16 |
| DIGIBIB | 22 | MyCoRe | 9 |
| DigiTool | 10 | Open Journal System | 24 |
| DiVA | 26 | Open Repository | 19 |
| DoKS | 5 | OPUS | 72 |
| DSpace | 1608 | PMB Services | 3 |
| EDOC | 1 | SBCAT | 3 |
| EPrints | 578 | SciX | 3 |
| Equella | 5 | SobekCM | 1 |
| ETD-db | 30 | WIKINDX | 1 |
| Fedora | 47 | Zentity | 1 |
| Fedora-Fez | 11 | Others | 511 |
| Greenstone | 21 | **Total** | **3469** |

Rourkela; IIT Delhi and IIM Kozikode. INFLIBNET joined in 2006. Indian Institute of Astrophysics have the highest number of records (3060), followed by OpenMed (2904), IIT Delhi (2143), NIT Rourkela (1883), National Centre for Catalysis Research (1774) and so on.

**5.7 Year Wise Growth of OA Repositories**

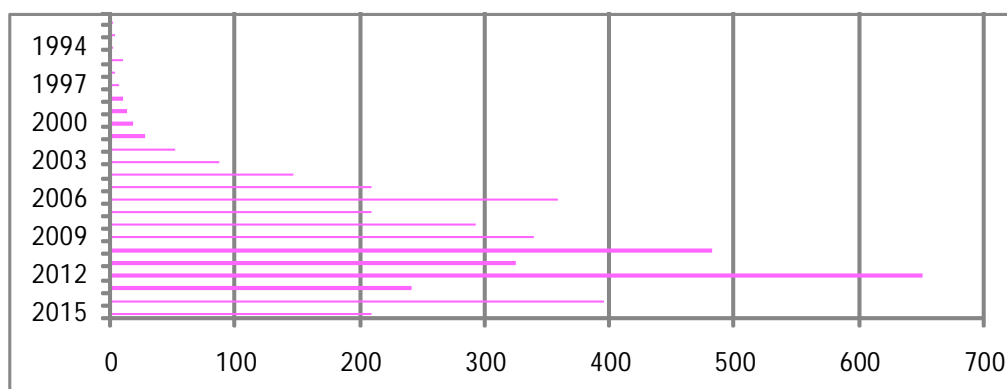The year-wise growth of registered repositories with ROAR is graphically represented below (Fig-1) .

## 6.1 Backdrop of its Information

With the impetus of the successive OA conclaves, held in Budapest, Bethesda and Berlin, there grew a number of OA-repositories world-wide by the end of 2003. But none of them was in a position to provide a "single comprehensive or authoritative list of OA-repositories"; many of them provided a basic listing only; they were unable to give a structured information service with cataloguing and



**Figure 1: Year-wise growth of repositories**

### 6. OpenDOAR

As mentioned in section 3.1. above, the Directory of Open Access Repositories (OpenDOAR) is a prominent OA repository with an worldwide coverage. As it claims, the OpenDOAR provides for a quality-assured listing of all OA repositories from anywhere in the world. Its staff members are deputed to visit OA repositories; harvest the contents; categorize them and assign metadata to allow their exploitation and wider use so as to "ensure a high degree of quality and consistency in the information provided".[31]

bibliographic description of the contents; and allied features like, search, filter etc., so that the users know the scope and comprehensiveness of the information, and effectively use those information. The repositories established earlier could not offer many of such facilities; and in that backdrop, the OpenDOAR was established with these points in consideration.[32]

### 6.2 Maintenance of OpenDOAR

It was initially developed by the University of Nottingham, UK in collaboration with the Lund University, Sweden, the home of 'Directory of Open

Access Journals', as a part of the former's OA portfolio and was initially funded by the Open Society Institute, SPARC Europe, JISC, and the Consortium of Research Libraries (CURL) After the formative period, the SHERPA Services, established at the Centre for Research Communications at the University of Nottingham was assigned to maintain the OpenDOAR under finance from JISC.

### 6.3 Scope of Service

OpenDOAR's primary objective is to augment OA movement and extend support in furthering research and innovative activities through global exchange of information.

OpenDOAR facilitates Repository-search, according to Keyword, Subject, Content, Repository-Type, Country, Language and Software etc.

OpenDOAR users can find original research outputs in the repositories. OpenDOAR contents are accessible by search engines, third-party service providers, and alert-service providers.

### 6.4 Criteria for Inclusion and Exclusion

OpenDOAR collects and provides information on 'sites that wholly embrace OA'; and those provide full text resources; sites with any type of access control are excluded; sites 'that consist of metadata records only' or provide 'a library catalogue' or 'locally accessible e-books' are also excluded. Though OpenDOAR basically lists the publication repositories, who are the major type; it also lists other types of repositories like that 'of images or data-sets.' OpenDOAR excludes sites which are 'repeatedly inaccessible'; sites, which exclusively contains e-journals; sites having no OA materials; sites requiring gated access and sites which are

proprietary database or which host subscription-based journals. Not all the repositories listed in OpenDOAR are 'OAI-PMH compliant'. While OAI-PMH is of wide use in facilitating search of OA materials, the 'use of OAI-PMH is not synonymous with OA'.

### 6.5 Special Features of OpenDOAR

The user-groups of OpenDOAR includes 'researchers, browsers, service-providers, data-miners, administrators and funders'; and each of these user-groups finds OpenDOAR compatible enough to its needs and expectations.

OpenDOAR provides for the facility to 'identify, sort and locate different repositories', which helps in developing new services and uses. One such is 'the development of overlay journals'.

OpenDOAR statistics help 'to examine the emerging trend and structure of the worldwide repository-network'. OpenDOAR's ongoing 'work on classification; and on metadata allows innovative search services' facilitating efficient identification of resources with precision, resulting in their wider use. For this reason, 'several other services use OpenDOAR as the basis for their search and harvest process'. OpenDOAR provides a number of tools for Repository Administrators, like Application Programmers' Interface (API), OpenDOAR Charts, Email Distribution Service, Policies Tools etc.

OpenDOAR provides for comprehensive content search as depicted below with the search item 'Rabindra Nath Tagore'. OpenDOAR provides for repository listing: continent-wise, country-wise, repository-type wise and so on. One can also browse the contents held by the repositories. OpenDOAR extends various other advanced search facilities through OpenDOAR Charts.

## 7. Comparison Between ROAR and OPENDOAR

Currently, the two leading OA-Repositories world-wide are: OpenDOAR and ROAR, having 3015 and 4159 databases respectively (February, 2016). Here is a comparison between them (Table-9 and 10 )

knowledge would take some more time, when the philosophy of OA would become a universally accepted concept. The countries in the developing and under-developed world should seriously encourage OA movement and embark upon setting

### Table 9: Comparative Statement between Open DOAR and ROAR

| ROAR | OpenDOAR |
| --- | --- |
| Search by Keyword | Search by Keyword |
| Filter by: Repository type, Software, Country | Filter by: Repository type, Software, Country, Language, Content type, Subject area |
| Content Growth Statistics | Analytical Statistics |
| Celestial - Harvesting analytics database | API Policies Tools |

### Table-10: Collection Approaches: DOAR and OpenDOAR

| ROAR | OpenDOAR |
| --- | --- |
| Repositories | Repositories only |
| Some Open Access Journals | |
| Allows metadata-only and gated access items | Must have some Open Access Full Texts |
| Self-registration only | Suggestions and proactive discovery |
| Taken on trust + some automated validation | Manual Validation |
| Courtesy: Millington | |

## 8. Conclusion

The OA-movement has been advancing in considerable stride and has found reasonable number of followers. But for a world-wide movement to advance, in the backdrop of unequal technological development, a period of just a couple of decades is not a sufficient time; and the movement can be considered to be still in its infancy. Realization of the vision of a net-worked world-knowledge-society and the dream of the maximum liberalization of

up OA Repositories in their respective countries to boost up the movement and derive the envisaged benefits.

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