

A Strategy to Reveal Hidden Treasures of Anna University

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Abstract

This paper provides an understanding of the necessity of creating an Institutional repository (Reveal Hidden Treasures) in Anna University, various steps involved in the creation – data identification and selection, data collection, Design and development that involves software selection & finally maintenance of the repository. This paper also analyses the complexity involved in both creation and maintenance of digital repository. Amidst complexities, the benefits rendered to the institution due to creation of this repository and how this fills the gap areas of R&D in Science & Technology is brought out in this paper.

In addition this paper brings out the growth statistics of Anna University from the year it got affiliated (2001) till today, the details of research outputs being published in various forms say article, conference papers, review, editorial, etc., and under various subjects – Engineering, Computer Science, Medicine, Biochemistry, etc., - these statistical data collection & segregation forms an input to bring out the hidden treasures of Anna University. Finally, a preliminary estimate of the expenditure involved in the creation and maintenance of Institutional Repository is also discussed in this paper.

Keywords: Institutional Repository, Segregation, Data Collection, Anna University

1. Introduction

Anna University was established on 4th September 1978 as a unitary type of University. It offers higher education in Engineering, Technology and allied Sciences relevant to the current and projected needs of the society. Besides promoting research and disseminating knowledge gained there from, it fosters cooperation between the academic and industrial communities. The University was formed by bringing together and integrating the following technical institutions in the city of Madras:-

- ◆ College of Engineering, Guindy (CEG)(1794)
- ◆ Madras Institute of Technology, Chrompet (MIT) (1949) and three Technological Departments of the University of Madras.
- ◆ Alagappa College of Technology (ACT) (1944)
- ◆ School of Architecture and Planning (SAP) (1957)

Presently 625 Engineering Colleges are functioning under Anna University - 4 constituent colleges with University Departments, 13 Constituent colleges of Anna University, 12 Government & government aided

Engineering Colleges and 596 affiliated colleges of Anna University under four regional centres in Tirunelveli, Madurai, Thiruchirapalli & Coimbatore.

The Anna University, which is of the affiliated type, is a member of the Association of Indian Universities, the Association of Commonwealth Universities and Partner of UNESCO International Center for Engineering Education (UICEE). UGC have accredited Anna University with Five Star Status in 2002 which is the highest rating. With proven capabilities both in academic and research areas, Anna University was able to receive this honour for a period of five years for excellence in Technical Education.

2. Identification of the Research Problem

Progress of a University is assessed by its scientific productivity which is related to the quantity and quality of research publications coming out from its academic community. Any institution is ranked and visible based on the research output of its faculty and how they utilize the human resource, financial, and material aspects for the scientific production. It is assessed by the contributions in the National & International level, the number of citations etc by the individual, departmental or subject wise.

The research output of Anna University Chennai in various disciplines are scattered amongst nearly 53 Departments in 8 Faculties of which some are interdisciplinary in nature. Since this potential data is not available in common pool in the form of an institutional repository, researchers have neither awareness nor accessibility to their own institutional research output. A repository of the research output of an academic institution will be helpful in safeguarding the researchers from the “publishers’ monopoly” to some extent by the use of open source software.

3. Objectives

The basic vision of the proposal is to develop a “Repository of Scientific Productivity of the Academia in Anna University Chennai for the last 20 years with proper updating at regular intervals is envisaged.

The Major Aims

- ◆ To develop a Institutional/Digital Repository (IR) of the literary/R&D output/scientific productivity of the faculty of Anna University over more than two decades (1989-2012)
- ◆ To enhance the visibility of the productivity profile of Anna University Chennai
- ◆ To facilitate online and open access to the research publications of Anna University Chennai

4. Methodology

The proposal aims at developing a national service that gives access to digital repository records, derived by harvesting metadata from institutional and subject-based repositories using the Open Archive Initiative

Protocol for Metadata Harvesting (OAI-PMH). In addition, the project aims to provide access to these institutional assets through Resource Discovery Network (RDN) faculty level hubs and the Education Portal. It is also investigating the use of Web Services technologies for the enhancement of metadata and for the automatic linking of citations. The steps that will be adopted towards completion of this project includes

4.1 Data Identification and Selection

The total numbers of faculty members working in the eight Faculties are 449. Among the faculty, 136 are Professors, 137 are Associate Professors and remaining 176 faculties are Assistant professors.

Table 1 - Quantum of Faculty, Anna University

| S. No | Departments | Professor | Associate professor | Assistant Professor | Total |
|-------|---|------------|---------------------|---------------------|------------|
| 1 | Faculty of Technology | 17 | 13 | 17 | 47 |
| 2 | Faculty of Civil Engineering | 26 | 25 | 29 | 80 |
| 3 | Faculty of Mechanical Engineering | 27 | 24 | 28 | 79 |
| 4 | Faculty of Electrical and Electronics Engg | 4 | 19 | 8 | 31 |
| 5 | Faculty of information and Communication Engg | 16 | 28 | 42 | 86 |
| 6 | Faculty of Science and Humanities | 36 | 21 | 37 | 94 |
| 7 | Faculty of Management | 4 | 1 | 7 | 12 |
| 8 | Faculty of Architecture and Planning | 6 | 6 | 8 | 20 |
| | Total | 136 | 137 | 176 | 449 |

4.1.1 Data Collection

The data to be collected include journal articles, monographs, books, Conference Papers, Theses and dissertations, Technical and Project Reports. Collected data are segregated under various categories

- ◆ Documents (Count) published in all years from 2000 to 2013
- ◆ Document type published
- ◆ Subject of the Document
- ◆ Country Presented

Table 2: Annual Statistics of Published Documents

| YEAR | Documents Published |
|--------------|----------------------------|
| 2013 | 114 |
| 2012 | 1744 |
| 2011 | 1643 |
| 2010 | 1115 |
| 2009 | 872 |
| 2008 | 818 |
| 2007 | 745 |
| 2006 | 722 |
| 2005 | 532 |
| 2004 | 432 |
| 2003 | 361 |
| 2002 | 284 |
| 2001 | 243 |
| 2000 | 215 |
| TOTAL | 9870 |

Statistics of documents published from year 2000 till date is collected and the results are furnished below.

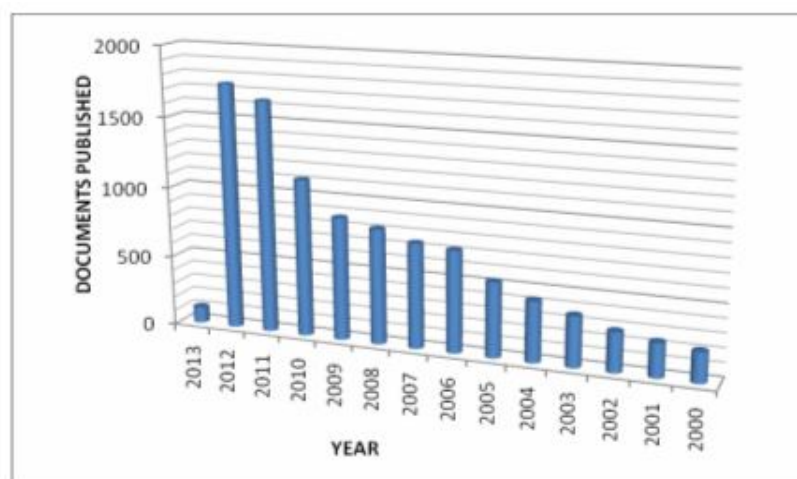
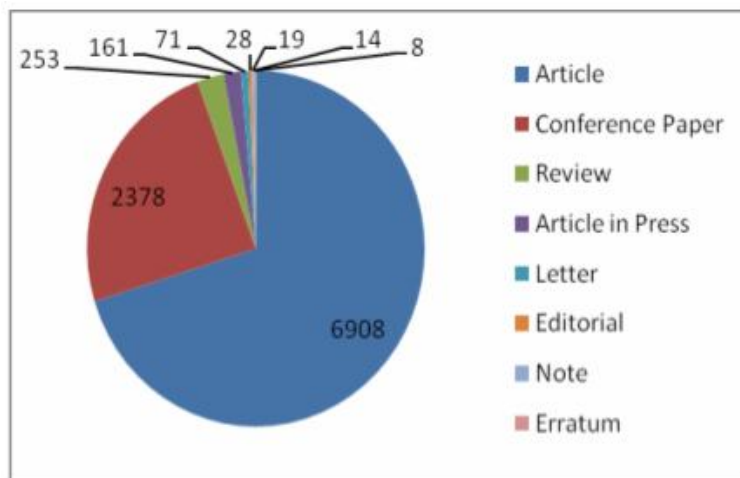


Figure 1: Pictorial Representation of the above results is provided below

Statistical analysis of number of documents published in different forms from the year beginning from 2000 to 2013 is done and results are furnished below.

Table 3 - Statistics of Document Type

| Document Type | Documents Published |
|------------------|---------------------|
| Article | 6908 |
| Conference Paper | 2378 |
| Review | 253 |
| Article in Press | 161 |
| Letter | 71 |
| Editorial | 28 |
| Note | 19 |
| Erratum | 14 |
| Short Survey | 8 |
| TOTAL | 9840 |

**Figure 2 - Pictorial Representation of the above results is provided below**

Statistical analysis of number of documents published under various subjects from the year beginning from 2000 to 2013 is done and results are furnished below.

Table 4 - Document Segregation on Subjects – Statistics

| Subject Area | Documents Published | Subject Area | Documents Published |
|--|---------------------|--------------------------------------|---------------------|
| Computer Science | 1364 | Agricultural and Biological Sciences | 210 |
| Materials Science | 1210 | Earth and Planetary Sciences | 199 |
| Medicine | 1034 | Business, Management and Accounting | 163 |
| Physics and Astronomy | 1022 | Multidisciplinary | 140 |
| Chemistry | 869 | Decision Sciences | 78 |
| Chemical Engineering | 772 | Neuroscience | 62 |
| Biochemistry, Genetics and Molecular Biology | 714 | Psychology | 47 |
| Environmental Science | 582 | Nursing | 46 |
| Mathematics | 481 | Economics, Econometrics and Finance | 32 |
| Energy | 289 | Health Professions | 29 |
| Immunology and Microbiology | 267 | Arts and Humanities | 23 |
| Pharmacology, Toxicology and Pharmaceutics | 221 | Dentistry | 14 |
| Social Sciences | 217 | Veterinary | 12 |
| TOTAL | 10097 | | |

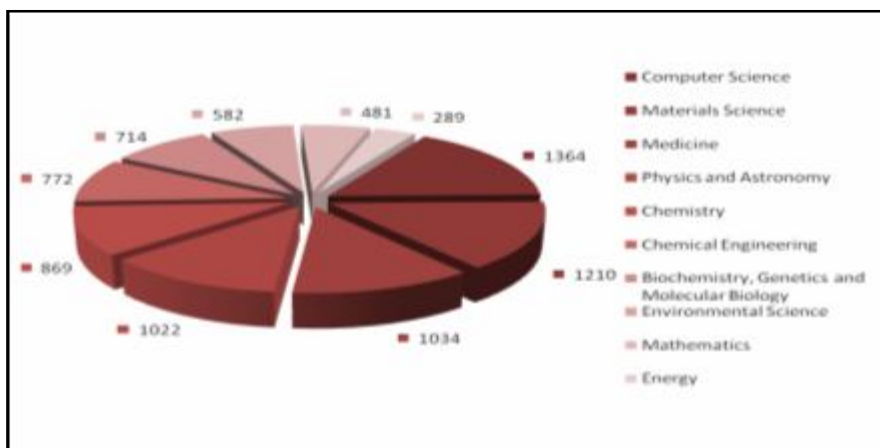


Figure 3 - Pictorial Representation of the above results is provided below

Statistical analysis of number of documents published in various countries from the year beginning from 2000 to 2013 is done and results are furnished below.

Table 5: Statistics of documents published in different countries

| Country | Documents published | Country | Documents published |
|--------------------|----------------------------|------------------------|----------------------------|
| India | 8689 | Jordan | 6 |
| Italy | 699 | Greece | 6 |
| United States | 314 | Romania | 6 |
| Japan | 203 | South Africa | 6 |
| Germany | 188 | New Zealand | 5 |
| South Korea | 169 | Hong Kong | 5 |
| United Kingdom | 159 | Bangladesh | 5 |
| Malaysia | 150 | Egypt | 5 |
| Czech Republic | 104 | Chile | 4 |
| Canada | 87 | Kuwait | 4 |
| France | 80 | Slovakia | 4 |
| Austria | 55 | Lithuania | 4 |
| Netherlands | 52 | Hungary | 3 |
| Taiwan | 45 | Viet Nam | 3 |
| Switzerland | 43 | Ireland | 3 |
| Australia | 38 | Israel | 3 |
| China | 38 | Belize | 3 |
| Singapore | 32 | Argentina | 3 |
| Sweden | 31 | Ukraine | 2 |
| Brazil | 30 | Eritrea | 2 |
| Spain | 30 | Tunisia | 2 |
| Belgium | 30 | Peru | 2 |
| Mexico | 29 | Slovenia | 2 |
| Bulgaria | 28 | Serbia | 1 |
| Saudi Arabia | 28 | Bahrain | 1 |
| Portugal | 24 | Costa Rica | 1 |
| Poland | 20 | Malta | 1 |
| UAE | 14 | Estonia | 1 |
| Denmark | 13 | Trinidad and Tobago | 1 |
| Finland | 12 | Nepal | 1 |
| Croatia | 11 | Indonesia | 1 |
| Thailand | 10 | Gabon | 1 |
| Norway | 9 | Ghana | 1 |
| Russian Federation | 9 | Nigeria | 1 |
| Iran | 8 | Libyan Arab Jamahiriya | 1 |
| Oman | 8 | Venezuela | 1 |
| Turkey | 8 | Latvia | 1 |
| TOTAL | 11600 | Yemen | 1 |

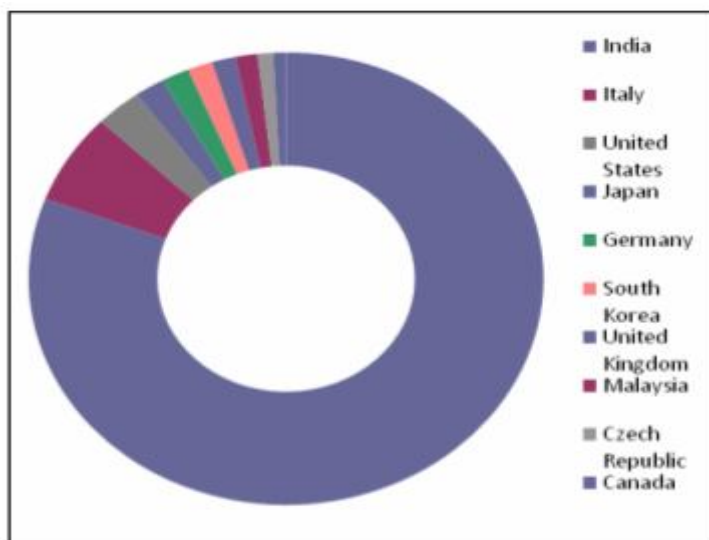


Figure 4 - Pictorial Representation of the above results is provided below

4.2 Design & Development

4.2.1 Software & Hardware

Dspace, an open software will be used to create the proposed Digital repository as evident from literature and other sources that Dspace have been used by many libraries and institutions in India and abroad.

The necessary operating system software and hardware will be obtained for content creation and development.

4.2.2 Content Creation and Development

It involves converting print, pre-print or post-print documents into digitized form by scanning or using other mechanism. The converted form formatted with standard formats such as PDF, TIFF, JPEG, etc. Metadata for digital content also will be assigned by choosing appropriate standards such as Dublin Core metadata elements.

4.2.3 Content organization

The content will be organized in different communities and sub communities are according to the subject or discipline/ faculty wise for easy retrieval.

4.3 Web hosting

Once the step 3 is completed, a separate web site for Digital repository will be developed and hosted, which will be linked to the university website and Library web site .The content will be made accessible through the CUSAT web site /Digital repository web site / CUSAT Library web site to the public.

4.4 Maintenance

IR maintenance is one major work for survival of repository. Proper execution of this project requires the proper support from the real stakeholder such as administrative, faculty support and Information professional support etc. For the future sustainability of the repository, the submission of research productivity of each faculty to the IR will be mandatory.

With the team support the designed and developed repository will have to be updated regularly and maintained.

Project Schedule

Table 6 - Year wise Plan of work and target to be achieved in 2 years

| Sl. No | | Activity Planned |
|--------|---|--|
| 1 | A | Project initiation |
| 2 | B | Creation of Directory for Scientists/Faculty profile |
| 3 | C | Formulation of the methodology of collection of Bibliographic data a) Direct Approach & Interview Method b) Questionnaire Method (Micro level Questionnaire) c) Identify the primary and secondary sources of information (Web sites, annual reports, publications, news letters etc) |
| 4 | D | Choosing a suitable web enabled software for Developing Database and Repository (open source software) |
| 5 | E | Standardizations of metadata |
| 6 | F | Content up loading trail access of the data base |
| 7 | G | Web site creation and hosting of the Digital repository of Anna University Chennai |
| 8 | H | Report Submission |

5. Financial Assistance required

Table 7 - Estimated Expenditure

| Sl No. | Item | Per Annum | Total (2 years) |
|--------------------|---------------------------|-----------|-----------------|
| 1 | Project Fellow(1) 8000/pm | 96,000/- | 1,92,000/- |
| 2 | Contingency | 60,000/- | 1,20,000/- |
| 3 | Travel | | 20,000/- |
| 4 | Equipments (Server) | | 3,00,000 |
| 5. | Books & Journals | 50,000/- | 1,00,000 |
| 6. | Overhead | | 1,10,000 |
| Grand Total | | | 8,42,000 |

6. Research Outcome/Institutional Benefit

Anna University Chennai being a premier institution in the country for Undergraduate, Postgraduate studies and Research in Science & Technology, creation of one such Digital repository with OAI compliant will facilitate access to all those of scholarly communications of the research scholars and faculty, Knowledge Management, preservation of digital materials and also enhancing the University's prestige by showcasing its academic research, institutional leadership role for the library, assessment of institutional productivity and performance.

The proposed repository helps to highlight the hidden Treasures of University at the global level by

- ◆ Information auditing & Knowledge flow
- ◆ Bringing together scattered R&D out put
- ◆ Bringing visibility of Gray Literature
- ◆ Identify and systematically evaluate the science and technology innovations of the Anna University Chennai
- ◆ Identify the stronger and weaker areas in the Science & Technology research.
- ◆ Identify the Gap areas, and fill the Gap in the R&D of Science & Technology in the Nation
- ◆ Public Accessibility to Scientific Research and Scholarly Information.
- ◆ Promoting the 'Open Access' to Scholarly Knowledge concept, created by the University's research units, for the consumption of Public Commons.
- ◆ Global visibility of the Institutions & Scientists
- ◆ Seamless flow of Knowledge leading to increased scientific productivity and knowledge production.

7. Conclusion

This study helps to fill the gap areas of R & D in Science & Technology. Its focus is the nature of knowledge created by faculty at the interface between businesses, social and economic aspects in the context of major changes likely to affect the nature of demand for such knowledge. It helps to harness the intellectual potential of university research community. It helps the university to take up a leading role in developing "big science" projects. All these shall be made possible by successful creation & maintenance of Digital Repository.

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