SCHOLARLY INFORMATION RESOURCES ON THE WEB

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ABSTRACT

This article presents an overall view about the different types of scholarly information sources available on the internet, especially in the field of science and technology both free as well as subscription based. These resources are generally very useful for the practicing library & information professionals in their day to day life to provide required information quickly to their clients/users with the help of internet technology. Since these resources are available freely and no subscription cost involved, anyone with internet connectivity can get required information at their desktop.

Keywords : Electronic resources, Internet, Reference sources, Science, Technology

1. INTRODUCTION

Libraries are hugely complex organization which needs to operate across many boundaries but have few, if any, unique services. Libraries are survived for so many millenniums as they adopt to meet the new circumstances and accordingly full filling their users need using new technology. Libraries are there for the long term, not only in their duty to preserve humankind's recorded information but as a centre of excellence in accessing, using and also creating information and knowledge. Doomsday scenario have come and gone, yet excellent libraries keep giving useful services to their users whenever there is any need arises and also keep the user informed about new resources they get from internet for the benefit of user. Information is a natural resource and the lifeblood of national development. Access to information is seen to be the key to personal and national economic success. As information professional, we continually struggle to increase awareness of the electronic reference resources available on the internet. Electronic books and journals are available through internet both free and commercial purposes. Internet resources freely available in the field of science and technology are well established and still continue to evolve, offering new features and access to information that was not as readily available in the print world. Today, there is an increasingly multi-disciplinary aspect to many field of study especially in the field of science and technology and many more micro-subjects are still evolving. Scientists and engineers are generally not extensive library user. Studies have shown that they rely most heavily on colleagues, internal company material and departmental and personal collection of documents to satisfy their information needs (Pinelli, 1997 ; Tenopir, 2004). Scientists and Engineers employed in industry are expected to be self sufficient to a large degree in their quest for job related information. In this context, the internet is taking an important role in the working lives of practicing scientists and engineers. It facilitates communication with colleagues and can be useful in searching internal information resources within the laboratory or libraries. It also provides access to millions of web sites, a number of which have valuable information for engineers, researchers and scientists. So there is a need to

have an overall idea about the different internet based reference sources which an Information Scientists can provide to the scientific and engineering community. This paper explores some of the internet based information resources in the field of science & technology, covering both free and subscription based sites. One thing we must remember that though internet provides us a great platform to find out information quickly, it has also undergo constant change in content, availability , and structure. So the accuracy of the description discussed here may change over time.

2. INTERNET RESOURCES

The following will give an overall idea about the different types of resources we can find out and use for S & T communities.

2.1   ELECTRONIC BOOKS, JOURNALS, THESIS & DISSERTATION

Directory of Open Access Books (DOAB)
 <http://www.doabooks.org/doab> (Last accessed on 05.09.2013)
The primary aim of DOAB is to increase discoverability of Open Access books. Academic publishers are invited to provide metadata of their Open Access books to DOAB. Metadata will be harvestable in order to maximize dissemination, visibility and impact. Aggregators can integrate the records in their commercial services and libraries can integrate the directory into their online catalogues, helping scholars and students to discover the books. The directory will be open to all publishers who publish academic, peer reviewed books in Open Access and should contain as many books as possible, provided that these publications are in Open Access and meet academic standards.

American Libraries
< http://archive.org/details/americana>   (Last accessed on 05.09.2013)

The Internet Archive is a 501(c)(3) non-profit that was founded to build an Internet library. Its purposes include offering permanent access for researchers, historians, scholars, people with disabilities, and the general public to historical collections that exist in digital format. Founded in 1996 and located in San Francisco, the Archive has been receiving data donations from Alexa Internet and others. In late 1999, the organization started to grow to include more well-rounded collections. Now the Internet Archive includes texts, audio, moving images, and software as well as archived web pages in our collections, and provides specialized services for adaptive reading and information access for the blind and other persons with disabilities.

Canadian Libraries   <http://archive.org/details/toronto>   (Last accessed on 05.09.2013)

The Thomas Fisher Rare Books Library The Thomas Fisher Rare Books Library has been outstanding in it's want of digitizing portions of it's unique holdings through Internet Archive Canada. The library itself houses such collections as the Nuremberg Chronicle (1493), Shakespeare's First Folio (1623), Newton's Principia (1687), and Darwin's proof copy (with annotations) of On the Origin of Species (1859). Other collections include Babylonian cuneiform tablet from Ur (1789 BC), 36 Egyptian papyrus manuscript fragments (245 BC), and many important Canadian literary figures. The Library constitutes the largest repository of publicly accessible rare books and manuscripts in Canada.

Project Gutenberg http://www.gutenberg.org/wiki/Main_Page (Last accessed on 05.09.2013)
Project Gutenberg offers over 42,000 free ebooks: choose among free epub books, free kindle books, download them or read them online.

Universal Digital Library < http://www.ulib.org/index.html> (Last accessed on 05.09.2013)
This site contains millions of e-books and is maintained by Carnegie Mellon University.

OAPEN Library <http://www.oapen.org/home?brand=oapen>   (Last accessed on 05.09.2013)
The OAPEN Library contains freely accessible academic books, mainly in the area of Humanities and Social Sciences. OAPEN works with publishers to build a quality controlled collection of Open Access books, and provides services for publishers, libraries and research funders in the areas of dissemination, quality assurance and digital preservation.

Bio-diversity Heritage Library
<http://www.biodiversitylibrary.org/> (Last accessed on 05.09.2013)
The Biodiversity Heritage Library works collaboratively to make biodiversity literature openly available to the world as part of a global biodiversity community. BHL also serves as the foundational literature component of the Encyclopedia of Life**.**

Gale Virtual Reference Library <http://gale.com/gvrl> (Last accessed on 05.09.2013)
This virtual library includes many of the Gale reference titles and other publisher's titles as well. Libraries can purchase one book or an entire collection package. Users only see what their library has purchased. Pricing is on a title basis and once purchased the book is owned. Many of the free e-books are also available for free download.

Oxford Reference Online http://www.oxfordreference.com   (Last accessed on 05.09.2013)
The core collection includes more than 100 reference works, all published by Oxford University Press. The resources are updated three times a year with new titles, new editions and many more additional features.

Xreferplus <http://www.xrefer.com>   (Last accessed on 05.09.2013)
This reference collection includes the contents of hundreds of reference books from multiple publishers and covers major subject areas. Xrefer combines reference books from the world's leading publishers, delivering 24/7 online reference services for libraries.

FreeTech Books   <http://www.freetechbooks.com> (Last accessed on 05.09.2013)
This site lists free online computer science, engineering and programming books, textbooks and lecture notes, all of which are legally and freely available over the Internet.

Amazon Books <http://www.amazon.com> (Last accessed on 05.09.2013)
This is probably the largest site which provides information about books, music, movies and many more information. In this site one can order and get the item at the earliest.

SPIE <http://www.spie.org> (Last accessed on 05.09.2013)
SPIE – The Internal society for Optical Engineering is a not for profit society that has become the largest international force for the exchange, collection and dissemination of knowledge in optics, photonics, and imaging. Founded in 1955, SPIE is the growing legacy of those who seek to learn, discover and innovate by building a better world with light.

Janes <http://www.janes.com>   (Last accessed on 05.09.2013)
Jane's Information Group is a world leading provider of intelligence and analysis on national and international defence, security and risk developments. Jane's is an independent organization with an unrivalled reputation for accuracy, authority and impartiality. It was founded in 1898 and provides solution for defence news and analysis, military systems and equipment, terrorism intelligence, world wide national rail and urban transportation systems and country by country internal and external security and threat assessment etc. It is a subscription based site.

Public Library of Science (PLoS) <http://www.plos.org/>   (Last accessed on 05.09.2013)
PLOS (Public Library of Science) is a nonprofit* publisher and advocacy organization with a mission of leading a transformation in scientific and medical research communication. Every article we publish is open-access – freely available online for anyone to use – which benefits everyone, from researchers, educators, and patient advocates to funders, policymakers, and the public. Sharing research encourages progress – from protecting the biodiversity of our planet to finding more effective treatments for diseases such as AIDS or cancer.

Directory of Open Access Journals : Technology and Engineering
<http//www.doaj.org>   (Last accessed on 05.09.2013)
Compiled by Lund University libraries, the Directory of Open Access journals lists free full text scholarly journals. Each journal entry contains ISSN, Subject, Publisher, Language, Keywords, Starting year and a link to the journal.

SCIRUS   <http://www.scirus.com> (Last accessed on 05.09.2013)
Scirus is the most comprehensive science specific search engines on the internet. Driven by the latest search engine technology, Scirus searches over 300 million science specific web pages enabling one to (a) Pinpoint scientific, scholarly, technical and medical data on the web (b) find the latest reports, peer reviewed articles, patents, pre-prints and journals that other search engine miss (c) offer unique functionalities designed for scientists and researchers.

Networked Digital Library of Theses and Dissertations (NDLTD)
http://www.ndltd.org/   (Last accessed on 05.09.2013)
Networked Digital Library of Theses and Dissertations (NDLTD), an international organization dedicated to promoting the adoption, creation, use, dissemination, and preservation of electronic theses and dissertations (ETDs). We support electronic publishing and open access to scholarship in order to enhance the sharing of knowledge worldwide. Our website includes resources for university administrators, librarians, faculty, students, and the general public.

2.2 READY REFERENCE SOURCES

Ready reference sources offer quick answers to questions that may come up during the course of a work. An engineer or a scientist may need to look up a definition, composition of a material, drugs, a conversion table, units or a brief summary of an unfamiliar topic.

Dictionary of Units
 <http://www.ex.ac.uk/trol/dictunit/index.htm> (Last accessed on 05.09.2013)
An extensive collection of units of measurement is presented with definitions, explanations, formulas and conversions. It contains a section with online calculators to perform conversions.

Engineers Edge   <http://www.engineersedge.com> (Last accessed on 05.09.2013)

Tailored to the needs of mechanical design and manufacturing engineers, he site presents a large collection of data and online calculators.

eFunda   **<**http://www.efunda.com>   (Last accessed on 05.09.2013)
This site is intended to serve a broader audience that the Engineers Edge, which specializes in design and manufacturing. It was developed to answer the daily reference needs of engineers in any discipline.

Acronym Finder   <http://www.acronymfinder.com> (Last accessed on 05.09.2013)
This site provides definitions of acronyms with links for searching the terms in Amazon.com.

Free Online Dictionary of Computing
<http://foldoc.doc.ic.ac.uk> (Last accessed on 05.09.2013)
This is a searchable dictionary of computing, contains more than 15,000 terms. It provides definitions and detailed explanations.

Linktionary   **<**http://www.linktionary.com> (Last accessed on 05.09.2013)
This is an online dictionary/encyclopedia of internet technologies, networking hardware and protocols, and general web terminology. It provides concise definitions and detailed explanations along with links to additional information.

Wikipedia <http://en.wikipedia.org> (Last accessed on 05.09.2013)
The wikipedia is a free, collaborative encyclopedia. It contains articles on all academic subjects including computing and the internet. Using wiki software, users can create its contents, which are subject to editing and revision by others.

NetLingo   <http://www.netlingo.com/inframes.cfm> (Last accessed on 05.09.2013)
This site covers terms about the internet and world wide web, including technology, communication and business. The definitions are concise and often include cross references and links to additional information.

TechEncyclopedia   <http://www.techweb.com/encyclopedia> (Last accessed on 05.09.2013)
This site contains more than 20,000 computing and information technology terms. It includes both brief definitions and in-depth explanations. Most entries have illustrations, photos, charts and diagrams that help to elucidate the terminology.

Webopedia   <http://www.webopedia.com> (Last accessed on 05.09.2013)
This site is a searchable dictionary of computing and internet terms that is continually updated with new terminology.

2.3 GATEWAYS TO ENGINEERING INFORMATION

There are a number of websites that serve as broad entry points to engineering information. They are valuable in that many have done some evaluation and filtering of contents and the site they list are judged to have quality information at least to some degree. Most of the gateway services cite both free and subscription based resources. Google (http://www.google.com) and Yahoo (http://www.yahoo.com) can also serve as useful tools for locating ngineering information on the web.

EEVL : The Internet Guide to Engineering, Mathematics and Computing<http://www.eevl.ac.uk> (Last accessed on 05.09.2013)
This site was developed by academic information specialists in U. K. to serve as a national access point to internet resources in Engineering, Mathematics and Computer Science. EEVL provides description and links to over 10,000 web sites.

Infomine <http://infomine.ucr.edu> (Last accessed on 05.09.2013)
This is a large collection of internet resources relevant to engineering faculty, students and staff. The site is a co-operative effort among librarians, primarily in California, USA. The site contains over 100,000 links covering engineering, science, and many other disciplines.

SciTech <http://scitechresources.gov> (Last accessed on 05.09.2013)
This is a highly focused entry point to U.S. government sponsored information resources on the web. The site describes itself as catalog of government science and technology web sites. This site is managed by NTIS, the National Technical Information Service.

2.4 ELECTRONIC HANDBOOKS

A treaties on a special subject containing concise information, and being small enough to be held in hand. Handbook is written primarily for practitioners and serving for constant revision or reference. Handbooks are indispensable tools for scientists and engineers. Many well known handbooks from major publishers like CRC, Wiley & McGraw Hill are now available on the web on subscription.

ENGnetBASE <http://www.engnetbase.com> (Last accessed on 05.09.2013)
CRC handbooks are well known in engineering and science. The company has been producing quality publications in print for decades and is now making these materials available on the web for free. More than 200 handbooks are now available online covering all areas of science and engineering.

Knovel <http://www.knovel.com> (Last accessed on 05.09.2013)
This site provides a large selection of handbooks and advanced text from many publishers, including Wiley, McGraw Hill, Elsevier and many more. It is a subscription based site.

ASM Handbooks Online
<http://products.asminternational.org/hbk/index.jsp> (Last accessed on 05.09.2013)
The ASM handbook (previously known as Metals Handbook) is a 21 volume printed set of data and detailed information on thousands of metals and composites. It is now available through subscription on the web.

rf Café <http://www.rfcafe.com> (Last accessed on 05.09.2013)
This is a very specialized site calls itself as the "engineering onramp" to electrical engineering information on the web.

2.5 RESEARCH DATABASES

Searching bibliographic database permits scientists and engineers to determine what research has been previously done and published on a topic. Most of the databases are available on the web on

a subscription basis from vendors. Some engineering societies allow free public access to their databases. A number of government agencies have extensive technical report data available on the web and these are discussed below.

COMPENDEX   <http://www.engineeringvillage2.org> (Last accessed on 05.09.2013)
Compendex is the most comprehensive bibliographic database in the field of engineering. It is the online version of Engineering Index, a printed abstracting service that has been in business since 1894. Compendex indexes and abstracts approximately 5000 journals and conference proceedings, on an international basis. The full database contains more than 90,00,000 records, providing access to the engineering literature back to 1894. Subscription can be ordered from a number of online vendors. The database is produced by Elsevier Engineering Information.

INSPEC <http://www.iee.org/publish/INSPEC> (Last accessed on 05.09.2013)
This is an excellent database covering physics, electrical and electronic engineering, computer engineering, control engineering and information technology. Both journal article and conference proceedings are covered on a world wide basis. The database currently covers from 1969 to the present and back files for the years 1898 through 1968 are available. This database is produced by the Institution of Electrical Engineers (IEE, London) and is subscription based.

Web of Science <http://www.isinet.com/products/citation/wos> (Last accessed on 05.09.2013)
The most important feature of this database for engineers is the ability to do cited reference searching, to discover which research papers have been cited by other authors. This can be important for determining the quality of a paper and for finding information on elusive topics. This database is produced by Institute for Scientific Information, Philadelphia (ISI) and is available on subscription.

IEEE Xplore   <http://ieeexplore.ieee.org>   (Last accessed on 05.09.2013)
This is a powerful information system that provides coverage of all IEEE (Institution of Electrical and Electronic Engineers) publications from 1988 to the present. It is limited to IEEE and IEE (Institution of Electrical Engineers) publications only, but these are highly respected organizations in the field. IEEE Xplore contains both the bibliographic records and the full text of the papers. It is subscription based product, but non subscribers can access the bibliographic portions of the system at no extra cost.

Besides the above mentioned databases a number of engineering societies provide some level of free public access to their bibliographic records. The ASCE (American Society of Civil Engineers) has a database with records of its publications issued since 1995 (http://www.ascelibrary.org).

2.6 TECHNICAL REPORTS

Technical reports are one of the major important source of information for engineers and scientists. Though more of a research resource than a reference source, reports can contain valuable data for the engineers. Technical reports are documents that present results from research sponsored by government agencies. Earlier technical reports had been distributed via paper or microfiche copies, now however many agencies are making full – text copes of current reports available from their web sites.

NTIS Database <http://www.ntis.gov> (Last accessed on 05.09.2013)
The National Technical Information Service serves as the main clearing house for technical reports produced as a result of government research. The NTIS database, covering 1964 through the present is the single best database to use for accessing the technical report literature. Reports on many engineering topics can be found here, and NTIS also acts as a supplier for these materials. The full database is available on subscription, but the most recent ten years of the database can be searched for free at the NTIS web site.

NASA Technical Report Server (NTRS) <http://ntrs.nasa.gov> (Last accessed on 05.09.2013)
This database provides bibliographic access to many NACA and NASA generated technical reports and other related materials back to the early 1900's. Most of the reports produced by NACA (National Advisory Committee on Aeronautics) have been digitized and available on-line. Many of the newer NASA reports are also available full text. NTRS is available free to the public.

GrayLIT Network <http://www.osti.gov/graylit> (Last accessed on 05.09.2013)
This site serves as a portal to full text reports from DOD, NASA, DOE and EPA. It provides one stop access for engineers interested in publications from these agencies.

Energy Citation Database
<http://www.osti.gov/energycitations> (Last accessed on 05.09.2013)
The U.S. Department of Energy has sponsored tens of millions of dollars of research over the years. The agency produced the publication Nuclear Science Abstracts. The database includes technical reports, journal articles, and conference proceedings and covers from 1948 onwards. This is an excellent free resource for research in these areas.

2.7 STANDARDS

Standards are a different kind of information source which is equally important for specific requirements. Its importance is felt in the industrial community, to sustain the complicated mechanism of preparation, agreement and observance of standard practice in the various industrial and manufacturing process, methods terminology, definitions and symbols, etc. There are at-least one pre-eminent standard issuing body in each country, such as BIS (Bureau of Indian Standards) in India, ANSI (American National Standards Institution) in the U.S. Most society and industry standards are not available on the web for free, although there are numerous free databases available to find out what standards have been issued on a topic.

BIS (Bureau of Indian Standards) <http://www.bis.org.in> (Last accessed on 05.09.2013)
This is the official site of the National Standards body of India responsible for administration and coordination of standards, covering development of technical standards, product quality certification and consumer affairs etc. It was established in the year 1968.

ANSI (American National Standards Institute)
<http://www.ansi.org> (Last accessed on 05.09.2013)
ANSI serves as the umbrella organization for the administration and coordination of standards issued by groups within the United States.

NSSN <http://www.nssn.org> (Last accessed on 05.09.2013)
This is a database providing access to information on 2,70,000 standards produced by over 600 national and international organizations. The site offers one stop browsing for the world's standards. NSSN is produced and maintained by the American National Standards Institute (ANSI).

ISO (International Organizations for Standards)
<http//www.iso.org>(Last accessed on 05.09.2013)
The ISO plays a role similar to that of ANSI, but for the International Standards Community. The body promotes and co-ordinates the issuing of standards by 146 member groups, the goal of which is to create system of standards to facilitate and support world wide manufacturing and commerce.

ASTM International   <http://www.astm.org>   (Last accessed on 05.09.2013)
ASTM standards are held in high regard and it produces standards for materials, materials testing, products and services. The entire set of ASTM standards can be accessed on the web via subscription.

2.8 PATENTS

Patents, contains information about new discoveries and inventions. They are frequently used by scientists and technologists to gather information and knowledge about the quality of a product, of materials of engineering and technology and of methods of testing. Patent is an agreement between the government and the inventor for a limited time period, for which the inventor is granted exclusive rights to operate the process and have the sole right for the monetary gains.

Indian Patent Office <http://www.patentoffice.nic.in> (Last accessed on 05.09.2013)
This site provides information about Indian patents, designs, trademarks and geographic indications.

United States Patent Trademark Office
<http://www.uspto.gov> (Last accessed on 05.09.2013)
This site provides comprehensive access to U.S. patents and trademarks dates back to 1790 as well as recent patent application.

European Patent Office   <http://ep.espacenet.com>   (Last accessed on 05.09.2013)
       This site provides access to a collection of over 30,000,000 patents from Europe, the Unites States, and several other countries.

2.9 MISCELLANEOUS SITES

There are many other types of web sites that provide useful information to scientists and engineers.

Meetings and Conferences   http://www.allconferences .com   (Last accessed on 05.09.2013)
This is a directory that focuses on upcoming conferences, conventions, trade shows, exhibition, workshops, events and meetings.

Engineers Worldwide <http://www.engineersworldwide.com> (Last accessed on 05.09.2013)
Engineers involved in construction can find a wealth of information at this site.

ZDNet <http://www.zdnet.com> (Last accessed on 05.09.2013)
It offers a gateway to information technology data. It provides links to news, blogs, software to download, product reviews, pricing and technical papers from IT companies.

Internet Public Library <http://www.ipl.org> (Last accessed on 05.09.2013)
In this site one can found all the subject categories of information, ready reference sources, magazines and newspapers etc.

Refdesk.com (Science Information Resources)
<http://www.refdesk.com> (Last accessed on 05.09.2013)
This is a very good useful site for reference resources in science.

ERIC <http://eric.ed.gov/> (Last accessed on 05.09.2013)
Very useful site for bibliographic as well as full text information.

3. CONCLUSIONS

The web has made certain information seeking activities easier for academician, scientists and engineers. Earlier they used to depend heavily on printed materials but now they are getting the materials in the finger tips. So, web has certainly made the information access easier. More sites are coming on the web offering combinations of free and subscription based services. The best of these sites will prosper and grow, while the rest will disappear. The web sites that offer the more organized and best in indexing and consolidation of data will probably be most valuable and reliable in future, since they will provide greatest benefit to the engineering and scientific communities. Information achieves significant value only when it contributes to the achievement of important human purposes.

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