Dealing with Internet, its historical background, various services provided by it and about the intricacies involved in searching. The prominent Indian sites available on INTERNET with special reference to Science and Technology are discussed in detail.

HISTORICAL BACKGROUND

The Internet which is also known as the mother of all networks is the means of processing information in a most democratic way irrespective of any caste or religion. Internet, a collection of interlinked computer networks, connects millions of networks and the rate of increase in its use and new subscribers is growing very rapidly. Internet started in 1969 as a single US network, i.e., ARPANET, a network created by Advanced Research Project Agency of the US Department of Defence. This network linked researchers in various organisations and enabled them to share resources and information. In early 1980’s, this network split into two - one for military use and other for civilian purposes. The interconnection between them came to be known as internet. Other networks such as BITNET (Because its Time Network), CSNET (Computer Science Network), NSFNET (National Science Foundation Network), JANET and NREN (National Research and Education Network) were developed and connected with the internet. Internet is thus a collection of interlinked computer networks, or a network of networks. It provides global connectivity via a mesh of networks using the TCP/IP protocols.

THE INTERNET and WORLD WIDE WEB

Internet is a cooperative venture with the largest network association of the people. It is estimated that millions of users in around 75 nations are accessing the facility. At this point of time, nobody can predict accurate figures about the number of computers connected as internet is increasing at the rate of 10% in size every day. Internet is proving to be the precursor to the information superhighway.

There are two types of tools available to support searching on the Web. These include the search engines and browsers. A search engine is a retrieval mechanism which performs the basic retrieval task, the acceptance of the query, a comparison of the query with each of the records in a database, and the production of a retrieval set as output. The primary application of such search engines is to provide access to the resources that are available on the WWW and stored on many different servers. Browsers support browsing on the Web; this involves successive retrieval of individual documents on the basis of some relationship existing between one document and another. This is achieved through hypertext systems which offer representation of the links. The most widely used hypertext system is the World Wide Web (WWW). The browsing is supported through:

• An addressing system that allows the location of any object stored on a networked computer to be uniquely identified by a Uniform Resource Locator (URL).
- A Hypertext Markup Language (HTML) that allows the authors of a document to identify particular locations within their document as the source of the links and to specify the location of the target of those links.

- A Hypertext Transfer Protocol (HTTP) that allows copies of target documents stored on remote servers to be retrieved and displayed.

- A client program or Web browser such as Netscape Navigator or Internet Explorer that provides the user with control over the retrieval process and over the links to be activated.

The Gopher and Veronica were the most basic of search utilities which allowed browsing of servers of information in a menu format and Archie, an interface to a catalog of publicly available information allowed one to search for a particular file or document across the Internet. With the introduction of the World Wide Web these protocols now have become almost obsolete.

**THE WEB**

With its vast geographical boundaries, the Internet could not house all its information repositories in a single place. There was no centralised control of internet sites. Those having information had to advertise their services by using bulletin boards. The first effort in this direction was in the form of WAIS, i.e., Wide Area Information Service. It consisted of few designated servers which kept a directory of servers having the actual information. The servers indexed the database they held so that searching through it became easy. To access or search for any information, one connects to one of the top level servers and then proceeds from there. WAIS was successful as first attempt to provide unified access to internet. Gopher went a few steps further and provided a way to connect to any kind of information and not just to database servers conforming to particular protocol. Gopher is mainly a menu based retrieval system where information was presented as a directory or a menu. Selecting a menu item or a directory, entry will either fetch the relevant information or will provide with a subdirectory or a submenu which can further be selected on. With the advent of hypertext based systems, the information is presented in the form of interlinked hypertext documents instead of going from menu to submenu. This idea leads to the concept of World Wide Web.

The World Wide Web (WWW) is a system of Internet servers that supports hypertext to access several Internet protocols on a single interface. Almost every protocol type available on the Internet is accessible on the Web. These include: E-mail, Telnet, FTP and HTTP. The World Wide Web provides a single interface for accessing all these protocols. This creates a convenient and user-friendly environment. It is no longer necessary to learn all these protocols within separate, command-level environs. The Web gathers all these together into a single system. Information retrieval on the Web has been made possible through the Hypertext Systems which offer the representation of the links. A single hypertext document can contain links to many other documents.

**RETRIEVING DOCUMENTS ON THE WEB**

The Uniform Resource Locator or URL specifies the Internet address of a file stored on a host computer connected to the Internet. Every file on the Internet has a unique URL. Web software programs use the URL to retrieve the file from the host computer and the Directory in which it resides. URLs are translated into numeric addresses using the Domain Name System (DNS). The format of the URL is:

```
Protocol://host/path/filename
```

For example in the site ,
```
http://www.thetimesofindia.com
```

Http stands for the protocol, WWW stands for World Wide Web i.e. Web or the Internet. The middle name belongs to a particular organisation. The third part refers to the type of organisation to which the site belongs. Here 'com' means a commercial organisation. Similarly 'edu' means educational institutions, while 'org' normally stands for voluntary or non profit organisation. In addition to the above, dozens of domain names have been assigned to identify the country and locate files
SURFING FOR INDIAN INFORMATION ON THE INTERNET

stored on host computers in different countries around the world.

SERVICES PROVIDED BY INTERNET

A range of services are available on the net. These include:

(i) E-mail: distributes electronic messages and files to one or more electronic mail boxes.

(ii) Electronic journals

(iii) Online courses

(iv) Access Library Catalogs

(v) Join discussion groups

(vi) Search online databases

(vii) Obtain software, graphics and video

(viii) Electronic radio broadcasts and so on.

SEARCHING WITH INTERNET

To search for and retrieve the maximum information on the net, the following points need to be kept in mind.

(a) Evaluation of Internet Resources

There has been a lot of media exposure in relation to the Internet. There are varied opinions about internet and its usefulness. Some feel that it is merely a waste of time, as far as the authenticity and quality of the information available is concerned. For some it is impossible to get information from the disorganized, decentralized and even chaotic mass of information. Others feel that it is a wonderful media that offers solution to all the information retrieval problems. Despite the concern about the lack of structure with electronic information, the traditional criteria used for print media are equally applicable in this context. Potential reasons for use of information may be that they offer current information, better search capabilities, multiple and networked access, etc. However retrieving information from Net requires a lot of patience and devotion as the number of sites or web pages retrieved on any particular query are immense. It is very difficult to sift and sieve to retrieve the most useful site. Suppose for a given query, one has visited only 49 sites and found all absurd information, whereas the 50th site may contain useful information, but same need not be true for each and every case as we know that there is no system in the world which is 100% efficient or perfect whether it is any online system or internet. However a number of search engines sort the information retrieved on the basis of relevancy.

(b) Note Down the Useful Sites

While searching with internet it so happens that within the stipulated time a proper solution for a given query may not be found, but experience shows that surfing the net leisurely retrieves an exact article/reference or what the user is usually interested in. To remember these sites, it is imperative that regular habit of noting down all these sites or adding them to the bookmarks be cultivated. This helps in accessing these sites at a later date which is a very convenient and time saving task.

c) Intricacies Involved In Searching Internet

For doing internet searches, one should always keep in mind the site/sites that are to be searched for a specific query. It will be advisable to repeat the same query to the prominent sites of internet, i.e., Altavista, Infoseek, Hotbot, Excite.

For doing the search/searches through internet, one can also go through web directory say 'Yahoo. Com'. One can visit the site and decide the category to which it falls. Therefore it generally takes longer time for a site to appear in a web directory than through a search engine.

Some of the prominent search engines and their features are summarized below:

- ALTAVISTA

It is one of the best sites to search. It has also got the advanced search capabilities like combining the main keyword and its various aspects with
boolean operator i.e. AND, OR, NOT. Some of the special features include the provision of "Refine" tool for acronyms. One can enter a keyword as usual in the search box and click on submit. The "Refine your search link" option reveals a list of topics related to the term. Clicking on the topic will bring up a list of topics. For each topic, select require or exclude from drop-down menu in order to narrow down to the most specific term.

Search "like title" "VIRTUAL LIBRARY" will restrict the search to the mixed-case phrases found in the title of web document.

- **EXCITE**

Offers simple search options and also supports some advanced search options. Use plus sign (+) to specify that all documents have that word or use a minus sign (-) to specify that none of the documents have that word. Excite also supports full boolean operators and syntax.

- **INFOSEEK**

It only offers simple query options, but search words may be limited to particular fields (such as with in document title), or eliminated (precede the word with a sign "-" ) or required (precede the word with a plus sign "+")

For more information one can also see "INFOSEEK HELP"

- **HOTBOT**

It offers a Simple search and an Expert search. Simple search supports the Boolean 'AND' and 'OR' operators.

For phrase searching, one can enclose the phrase in double quotes (e.g. "Electronic library"). Expert search also supports data limits, media type (VRML, Audio, Javascript, etc) and location (country, etc.).

**INDIAN SITES AVAILABLE ON INTERNET**

The general belief is that searching for the S&T information from Indian sites on net is not a fruitful exercise. It is usually felt that one can only retrieve information on topics like recipes or horoscopes. For retrieving S&T information one had to depend on the CD-ROM’s, Online searches and manual sources. The scenario is changing very rapidly. There are now a number Indian sites for specific information. In this study some of these Indian sites have been surveyed and the information available on them has been studied in detail.

Some of these are discussed below:

(i) **Indian Books on Internet**

It is now possible to surf the net and browse and purchase books from India or books written or published by Indians. Three useful sites available for this purpose include:

- Indianbookshop.com, ibcindia.com and dkaagencies.com

(a) **www.indianbookshop.com**

It is one of the leading bookstores on internet which gives the widest coverage of books on all the major categories by renowned Indian authors. This site enables one to explore the information on various categories like culture, religion, science, ayurveda, history, sports, handicrafts, exports, travels, politics, meditation and many more. The number of books available on this site is ever increasing with thousands of books added each day. It is even possible to get the details of books belonging to 18th century. A powerful search engine allows one to search on a number of fields such as Author, ISBN No., Book title and so on.

(a) **www.bcindia.com**

The site being one of India’s foremost and efficient online booksource, the newly released books on any one’s subject of interest can be seen here. Order can be placed through internet and books are delivered at the door step.
(b) **www. dkagencies. com**

As a service organisation of over 3-decade long standing in the field of book trade, DK Agency has got a database that comprises of over hundred thousand Indian titles in English language alone. Book search is intended to primarily aid the general reader or user. Hence rendering of titles does not conform to AACR or other technical cataloguing formats. The details about the book can be had by its:

- Author
- Title
- Place of publication
- Publisher
- ISBN
- Subject approach

The wildcard search facility is available as also the boolean *AND* mode.

There are many more Indian sites on books not included here.

(ii) **Indian Companies/Establishments**

A search was conducted on the Internet in response to a query on top public sector-Government Indian companies/establishments. While surfing for this information on net, the site madrasonline.com/business was visited which provided this information under the title Business-Top Indian companies/establishments on the net (Public Sector-Government.). The names of these establishments are as follows:

- **Steel Authority of India:** (www. sail. co. in)

  The largest steel manufacturing and marketing establishment in India has manufacturing units established all over the country.

- **Bharat Heavy Electricals Ltd.** (www. bhel. com)

  The largest power equipment manufacturer catering to all sectors of energy namely thermal, hydro, nuclear, solar, oceanographic. One of the largest manufacturing facilities located in South Asia also has diversified engineering capabilities to cater to oil, gas and petroleum.

- **Bharat Petroleum** (www. bharatpetroleum. com)

  One of the three largest petroleum refining companies among the government sector plays a vital role in the oil related economy of the country.

- **State Bank of India** (www. statebankofindia. com)

  SBI, the largest bank in India having the largest clientele with its operations spread all over the country. Caters to a wide range of customers.

- **Reserve Bank Of India** (www. rbi. org. in)

  RBI, the nodal agency for all banking operations in India is a monetary agency guiding the financial sectors of the country.

- **Videsh Sanchar Nigam Ltd.** (www. vsnl. net. in)

  VSNL is the topmost Internet service provider in India today. All overseas communication facilities are provided by VSNL, one of the largest communication company in the government sector.

- **ICICI Bank** (www. icici. com)

  One of the largest financial institutions in India and a key institution playing vital role in shaping of industrial economy in the country.

- **Air India**

  It is a flag ship company of government catering to international air travel with its headquarters in Mumbai (Bombay). After clicking on it, one can get the information on Air India, flights, inflight service, frequent flyers and travel guide.

  After clicking on the name of each company, one can find out information on corporate profile, financial performance, business sector, product and service and future plans of the company. Same information can be retrieved through the web sites given in italics.
The site madrasonline.com/business also provides information on Chennai city, its industries, hot spots, transport along with online trading services on automobiles, food and food products, garments, leather, Ayurveda, Homeopathy etc.

(iii) Indian Ministries, Departments, States, Union Territories, Organisations, Indian Missions Abroad, Educational Institutions/Universities, Taskforces, Councils And Documents etc.

www.nic.in is the URL for getting information on any of the above.

National Informatics Centre (NIC), is a premier information technology organization in India, committed to providing state of the art solutions for the IT needs of the Government of India at all levels. NIC carries the distinction of being the largest organization in the country in this area and has setup a satellite based nationwide computer communication network called NICNET, with over 1400 nodes connecting the national capital, state capitals and district headquarters to one another. NIC has a nationwide presence with its offices spread across the country, from Leh to Andaman and Nicobar Islands.

For further information one can contact National Informatics Centre, Ministry of Information Technology, A block, CGO Complex, Lodhi Road New Delhi-110003 Telephone: 91-11-4361133/4363692 Fax: 91-11-4362628

E-mail: webmaster@www.nic.in.

In order to search the information on this site for U.S./European patents or to find out the list of Indian patent offices, one can use the site pk2id.delhi.nic.in. Here database access is password protected and available free to the registered users only. Registration can be done by sending the E-mail to NIC.

Pk2id.delhi.nic.in provides the following information along with patents information

How to contact us: Mode of payments
Visit home page: Statistics
Other relevant sites: Search EPIDOS-INPADOC
Order full text: Indian Patent offices
Complete patent document through fax: Controversial patents
Frequently asked questions

(iv) www.punenet.ernet.in

The holdings information in the libraries and other resource centres in Pune can be searched and retrieved through this site. It is a joint programme of University of Pune, the Centre for Development of Advanced Computing (C-DAC) and the National Chemical Laboratory (NCL). Pune-Net maintains centralized databases of information resources available in the participating libraries of Pune, thus user gets up-to-date information at one place. The directory of participating libraries in this joint venture can also be accessed from here. The user can retrieve the information through title, ISBN, dictionary and boolean search in case of books. In case of periodicals, the search can be done through title and holding details as access points. In order to know the holding details of libraries and other resource centres in Pune, this is one of the valuable Indian sites.

(v) www.insdoc.org

Information on resources and services of INSDOC, a premier organisation in the field of documentation and information science, technology, services and systems is available from this site. INSDOC is a national laboratory under the Council of Scientific and Industrial Research (CSIR). INSDOC’s activities fall under five broad categories.

1. Services, Products and Publications
2. Projects in Competency Areas
4. Education and Training
5. International Collaboration
Its other competency areas are: library automation, library networks, computer networking, CD-ROM networking, design and development of databases, feasibility studies and design, establishment and operational management of library-cum-information centres.

Wide dissemination of S&T information is an important aim of INSDOC, for this purpose, it has a network of regional centres located at Bangalore, Calcutta and Chennai.

INSDOC also provides access to online systems such as DIALOG and STN. It has an electronic library with over 3000 full text journals, patents, conference proceedings on CD-ROMs. It provides a range of services from these resources. Information can be had about the various training programmes conducted from time to time. The site also provides the list of current and forthcoming products of CD-ROM available from INSDOC.

(vi) www.nissat.org/centres.htm.

NISSAT, the National Information System for Science and Technology, plays a vital role in the field of information science and technology as it has the mandate to cover the entire spectrum of science and technology. Since its inception in 1977, NISSAT has emphasised on the information content, its development and utilization. This is a tedious activity in which very few information systems wants to be involved. Most of them invest their monetary and knowledge resources in creating infrastructures like networks -- without bothering about organizing information that has to flow through. As a result a large number of networks remain grossly under-utilized.

Apart from developing the information centres, networks and database projects, NISSAT conducts various training programmes, workshops, seminars and the annual 'Information Today and Tommorow' meets to propagate the importance of organizing S&T information.

The NISSAT Web site provides the following information under nine headings:

a) About NISSAT
b) Its objectives
c) Nissat centres
d) Its national activities
e) Its international activities
f) Address of NISSAT
g) Scientific productivity
h) R&D application
i) Newsletter

(vii) Journal in the field of Chemistry and Environment

If one is interested in the field of chemistry and environment, the information is available from the Indian research journal in the given field through the web site http://www.chemenviron.com. One can become the member of this journal. Membership fee of this journal under different categories is as follows

<table>
<thead>
<tr>
<th>Membership</th>
<th>Indian Fees</th>
<th>Foreign Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual</td>
<td>Rs. 200/-</td>
<td>US Dollar $20</td>
</tr>
<tr>
<td>Life</td>
<td>Rs. 2000/-</td>
<td>US Dollar $200</td>
</tr>
<tr>
<td>Fellow</td>
<td>Rs. 5000/-</td>
<td>US Dollar $500</td>
</tr>
</tbody>
</table>

*Including airmail changes
Indian information on education, business, arts, sports, news, entertainment etc. can be retrieved through the search engine KHOJ. One can also go to other search engines like dhan, samachar, Indialine, bawarchi and khel from here. The information on business and industry that can be retrieved from here includes:

- Companies (12333) New
- Directories (316) New
- Exporters (293) New
- General (193) New
- Organisations (205)
- Quotes (20)

After clicking over the above mentioned headings, one can find out the information on Indian companies, interface between global importers and Indian exporters on given product/products and export-import policy of India and daily updates on the Indian economy. It also provides insights, advice, project reports, tender information, directory type information and consultation to foreign firms interested in the hugely magnificent emerging market of India which is a must for global minded companies. This is probably the most popular search engine from India which would open doors to the trade community of the world.

A lot of useful information can be retrieved in S&T areas. For instance after clicking over the heading Medicine, one can get excellent information on ayurveda, homeopathy, acupuncture, panchkarma, massage, yoga, siddha, reiki and so on. The site also provides information about the medical conferences which are going to be held in India. Information is also available about the various correspondence courses organised by open universities in the field of alternative medicine. Apart from alternative medicines, it also provides access to the latest information of world’s databases in the field of genetic engineering, sequence analysis and structure and function of biomolecules. One of the world’s largest database on Animal Virus Information System (AVIS) is also available on the web.

A large number of web sites are available on Business Information of India.

(ix) www.brint.com/india.htm

This is one of the prominent site in the field of business and information technology in India. It focuses on business sites and business issues, technological sites and technological issues. The whole information is covered under 4 heads which are as follows:

- India: news, magazines, newspapers
- India: business sites and business issues
- India: technology sites and technology issues
- Other resources on india

The range of information includes the facts and figures about India, exciting business opportunities in India which include general overview of Indian economy, its growing role in global business; India’s export import policy; foreign exchange controls and taxes. One can also go through "The Hindu" which is the online edition of India’s national newspaper. Other newspapers available on this site are Blitz Weekly, India Abroad, Indian American weekly newspaper, New India-Times online and so on. Another prominent site for Indian News and Magazine is http://webhead.com/wwwvli/india/india216.htm. From this site one can also obtain the universal list of Indian periodicals after clicking on the heading TULIP. Trade information about India can be accessed under business sites and business issues. Useful information is available under the given heading, one has to simply select and click over it. One can also get industry profile of core Indian industries. Information on Indian infotech sector, daily information technology news, information technology trends, software development in India and information about JITNET; the Japan India Technology Network can be accessed under technology sites and technology issues, biographical profiles of renowned Indian scientists are also available on this site.

Under other resources on India, one can get the information which includes facts and figures, current news and events, Indian business and industry and so on. Discovery of India is also available here.
(x) www.trade-india.com

It provides the trade information of India. From this site one can browse and search through exporter's yellow pages and then order for the desired product. It also includes Indian importers' directory, international pages, export import trade flash and trade Indian bulletin board.

(ix) The Exporter's Yellow Pages

Available since 1990, it has been bridging the gap between the Indian Exporters and global importers. The current 8th edition of Exporter's Yellow pages carries authentic information on more than 46000 Indian exporters classified under different business headings.

(x) Indian Importers’ Directory

It is the first and the only one of its kind. The current third edition of Indian Importers Directory carries information about more than 10,000 Indian importers under various business headings.

(xi) International Pages

Being a gateway to foreign exporters and manufacturers, here one can access authentic and comprehensive information on worldwide exporters.

(xii) Export Import Trade Flash

It is a monthly newsmagazine containing news and views related to India's export import trade.

(xiii) Trade India Bulletin Board

It is a worldwide interaction forum for the international trading community. One can leave business messages (buying selling offer) here and get connected to one's prospective business partners around the globe.

(xiv) Indian Firm/Firms Dealing With All Types Of Chemicals

Manish International is an Indian firm (web site: India-future.com/manishchem/index.html) of international repute dealing with all kinds of chemicals. Another site is of Deepak Chemicals (www.deepakchemicals.com). The objective of this site is to promote the exports from India.

It is very difficult to accommodate each and every business site here, one can also search www.indiamarkets.com and www.indiaventures.com for business information.

SUGGESTIONS FOR POPULARIZATION OF INDIAN WEB

In order to popularize the Indian web, the focus should be on content migration. It aims at migrating all the information from the print to electronic media to port onto the net and bring it out from corner to the centre stage. The Collectorate of Pune has taken the lead in this respect and is in the process of making the web a single window for all the information about its departments. The general public can apply for ration cards and track the progress of their applications online. The Government of Hyderabad is also exploiting the potential of the net for the welfare of the common man. Similar systems can be developed in passport offices or other offices/departments which are involved in public dealing. Another good example of content migration is Rediff on the net. It has migrated GMAT and GRE test content on the web, thereby creating an entire community of users. From this site users can take tests on the site, enroll for courses, get feedback on their performances, buy books, sit for counselling sessions with experts. As we are well aware, E-commerce is not picking up in India because of the bottlenecks like payment systems and security issues but there are no such bottlenecks for content migration. We also know that no technology is complete in itself, unless and until it reaches out to common man or masses. Internet connection should be provided to school/colleges at large for its maximum utilization. It is also very essential to provide such connection to rural areas by opening cyber cafes, internet centres/booths and information should be made available to the villagers in their specific areas (e.g. in the field of agriculture/setting up of small scale industries) in
the language/languages in which they are well conversant. Internet booths/centres can also utilize the services of some intermediaries who can translate the information available in English into the language/languages which is known by the villagers.

ACKNOWLEDGEMENTS

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1) Websites (referred to in this article)