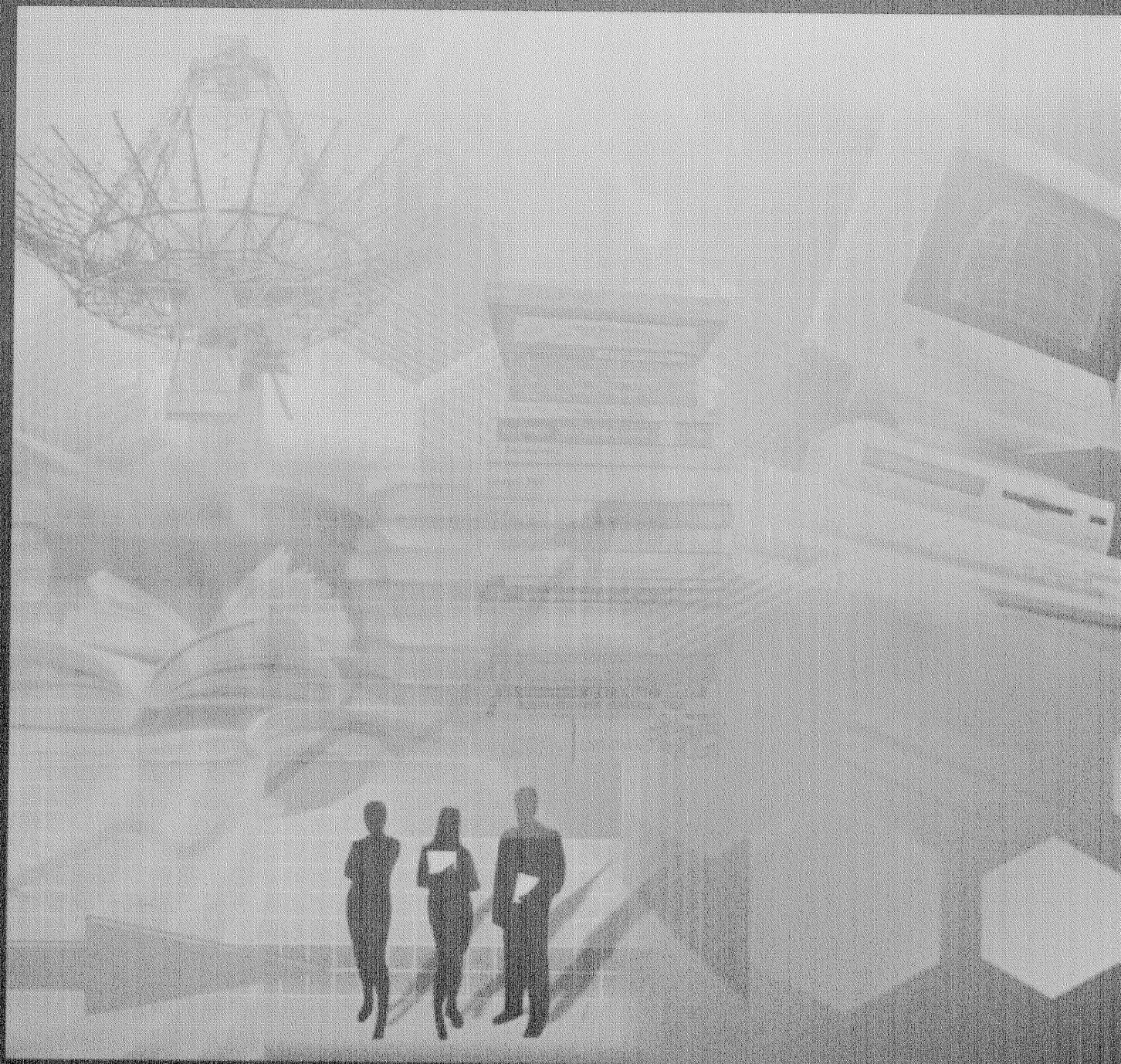


# Emerging Technologies and Changing Dimensions of Libraries and Information Services



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# Collection Development in National Physical Laboratory Library: A Case Study

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## ABSTRACT

This paper describes the collection development program of National Physical Laboratory, library. The library had good financial support but it could not meet all the requirement of its user community due to the exponential growth of literature, rising price of books and periodicals and shortage of space. An appropriate collection development plan was developed by resource sharing with outside libraries and making use of available information technology.

## Keywords

Collection Development, NPL Libraries

## 1. INTRODUCTION

Contemporary special libraries world over have been facing challenges to their collection development activities and hence to their survival. The special libraries in India are no exception. They too have been facing challenges on account of several factors such as changing publishing media, complexities of building collaborative resources, consortia models for subscription to e-resources, increasing publication costs, complex user demands, and managing users information needs within budgetary constraints. We do recognize that no library, however big it may be, can ever hope to meet the total demands of its clientele by developing collections on ownership basis. In the context of these constraints and challenges before special libraries, the need for formulating collection development policy has gained special importance. Such a policy document is indeed an important tool enabling libraries to channelize their limited finances for collection development activity. It incorporates and much sought after features such as guidelines for selection and acquisition of

literature, collaboration with libraries on resource sharing, levels of collection development, etc., as required for regulating the growth and development of collections.

Presently all libraries, including special libraries, are undergoing changes in the ways and manners in which they manage information and democratize access to information. For instance, Internet, which has interconnected the world electronically, and as such has changed the way libraries once used to handle their searching and processing operations, and manage their networking and resource sharing systems. Internet has also extended the potential of librarians, empowering them with tools to interact with their counterparts online beyond the domains of the physical library space. Internet has also emerged as a vast resource and can be harnessed, consulted and used like any other reference tool. Comparatively, it is far more dynamic, giving libraries the opportunities to deliver information to end user's desktop via email and web. The Web offers significant advantages such as integrating library and information services of several different libraries, offering new products and services such as OPAC, bibliographic databases, full-text journals etc. Such products and services are reaching campus-wide as well as to distant learners far more easily and more effectively than ever before. With such advancements in information and communications technologies, the libraries are gradually moving towards digital resources. CD-ROMs, OPACs, E-consortium etc. are fast replacing the print media. An increasing number of publishers have already shifted to the Web to offer their e-publications to the international community globally. The convergence of the Internet as a communication tool and the Web as a new medium of information storage and delivery represents a revolution that will make lasting impact on the publishing industry as well as information delivery system in the 21st century. Internet and Web have made it possible the concept of a digital library, and have brought about paradigm shift in the organizational culture of libraries and the roles library professionals play.

The library at National Physical Laboratory (NPL) is a special library, engaged in the business of providing library and information support to NPL scientists. In the context of emerging information technology scenario as discussed above and its perceived impact on information management as well as recognizing the urgent need to improve information access and delivery system of the library for the benefits of NPL scientists, the library had been undertaking a series of initiatives on the collection development front. This paper traces developments in the NPL library from the historic perspective. In particular it looks at the changes in its collection

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tive. In particular it looks at the changes in its collection development policies and programmes, in its access and delivery system and the way it had responded to the challenges to its survival and existence. It also seeks to demonstrate how initiatives on the part of NPL library had come to transform and advance the information accessibility scenario and how its initiatives on collection management front had come to benefit scientific community.

## 2. ABOUT NATIONAL PHYSICAL LABORATORY

The National Physical Laboratory is a constituent laboratory of the Council of Scientific & Industrial Research (CSIR). The CSIR has under its umbrella over 39 laboratories spread throughout the country. The NPL is one of the earliest national laboratories set up under the CSIR in New Delhi. Late Shri Jawaharlal Nehru had laid the foundation stone of NPL on the 4th January 1947. Late Dr. K. S. Krishnan, FRS, was the first Director of the laboratory. The main building of the laboratory was formally opened by Late Deputy Prime Minister Sardar Vallabhbhai Patel on the 21st January 1950. The function of Silver Jubilee Celebration of the Laboratory was inaugurated by Late Prime Minister, Shrimati Indira Gandhi, on 23rd December 1975.

The National Physical Laboratory is the premier research laboratory in India in the field of physics and related sciences. It is custodian of national standards of measurement in the country. It has developed core competencies in measurement standards, apex level calibration as well as in engineering materials, electronic materials, materials characterization, radio and space physics, global change and environmental studies, low temperature physics, and instrumentation. Its main activities are research and development, consultancy, sponsored and contract research, calibration and testing

Over the long period, the Laboratory has come to develop several new technologies of strategic, societal and national importance. The main aim of the laboratory is to strengthen and advance physics-based research and development for the overall development of science and technology in the country. In particular its objectives are:

- To establish, maintain and improve continuously by research, for the benefit of the nation, National Standards of Measurements and to realize the Units based on International System (Under the subordinate Legislations of Weights and Measures Act 1956, reissued in 1988 under the 1976 Act).
- To identify and conduct after due consideration, research in areas of physics which are most appropriate to the needs of the nation and for advancement of field
- To assist industries, national and other agencies in their developmental tasks by precision measurements, calibration, development of devices, processes, and other allied problems related to physics.
- To keep itself informed of and study critically the status of physics.

## 3. ABOUT NPL LIBRARY

The National Physical Laboratory at New Delhi has a specialized library collection in physics and related sciences for

catering to the information needs of scientists and technologists. The NPL library has by far the largest collection in physics in the country, comprising 5500+ electronics journals, 109 top ranking print journals, 44368 books, 72379 bound volumes, and 1318 Hindi books. In addition, it has a sizeable collection of standard specification of various standard bodies. Books are cataloged according to AACR-2 and classified by UDC scheme. The library has about 627 internal members, majority of which are scientists. It has quite a good number of government organizations and industries as its external members.

The library has been providing library and information services to scientists for their R&D pursuits. These include online literature search, online access to more than 5500+ full text journals and databases (coming under the e-consortium project of CSIR), electronic document delivery service, inter library loan, and reference service. The e-journals for online access are from leading publishers such as Science Direct (Elsevier), Blackwell, Springer, AIP, APS (American Physical Society), Wiley Inter science, John Wiley and sons, Oxford University Press, Royal Society of Chemistry, American Chemical Society. The archival access to these online journals goes back to 1995 in the case of Elsevier science journals and back to year 2000 in the case of other publishers. The library has expanded its intranet network by adding 7 dedicated nodes within the library premises in the reading hall. The library offers all walk-in users the facility to access electronic journals online provide the walk-in-users belong to educational and research institutes. The library offers wifi high-speed connectivity to the Internet for laptop users within its premises. The library has set up its website on the NPL intranet, and labeled it as KSK Library for providing latest information about its current activities such as current subscribed journals listing, new journals received in the week, link to electronic libraries and publishing houses, and also links to papers published by NPL scientists. The library has developed expertise to manage the official NPL website (<http://www.nplindia.org>). This site provides a window to global community on NPL research, its role and thrust areas of research, facilities, services and achievements.

**Table 1: The present status of NPL Library collection as on Dec 2009**

Books	44368
Hindi Books	1318
Bound Volumes of Journals	72379
Current Journals Subscribed	109
On Line Electronic journals	5500+ w.e.f. Feb 2005
Databases	3 (Scopus, Web of Science, Delphion)
Total Library staff	10

## 4. COLLECTION DEVELOPMENT

Collection development by Subject Areas Multidisciplinary / interdisciplinary themes of NPL, as mentioned earlier, cover the following core subject areas. Around these subject areas, the collection of the library is built.

- PHYSICAL SCIENCES
- MATERIALS SCIENCE, MULTIDISCIPLINARY

- PHYSICS, APPLIED PHYSICS, CONDENSED MATTER
- PHYSICS MULTIDISCIPLINARY
- METEOROLOGY AND ATMOSPHERIC SCIENCES
- ENGINEERING AND ELECTRICAL AND ELECTRONIC
- PHYSICAL CHEMISTRY
- MULTIDISCIPLINARY SCIENCES
- INSTRUMENTS AND INSTRUMENTATION
- GEOSCIENCES MULTIDISCIPLINARY
- ASTRONOMY AND ASTROPHYSICS
- ELECTROCHEMISTRY
- POLYMER SCIENCE
- OPTICS
- COATING FILMS
- TELECOMMUNICATION
- CRYSTALLOGRAPHY
- ANALYTICAL CHEMISTRY
- MULTIDISCIPLINARY CHEMISTRY
- MULTIDISCIPLINARY ENGINEERING
- GEOPHYSICS AND GEOCHEMISTRY
- ENERGY AND FUELS
- ENVIRONMENTAL SCIENCES
- AEROSPACE ENGINEERING
- INDUSTRIAL ENGINEERING
- NANOSCIENCE AND NANOTECHNOLOGY
- BIOTECHNOLOGY AND APPLIED MICROBIOLOGY
- CERAMICS
- REMOTE SENSING
- SPECTROSCOPY
- ACOUSTICS
- BIOCHEMISTRY AND MOLECULAR MICROBIOLOGY
- MATHEMATICAL PHYSICS APPLIED METALLURGICAL ENGINEERING AND METALLURGY
- MOLECULAR AND CHEMICAL PHYSICS, ATOMIC
- NUCLEAR MOLECULAR AND CHEMICAL PHYSICS APPLIED
- BIOPHYSICS
- PHOTOGRAPHIC TECHNOLOGY AND IMAGING SCIENCE
- MATERIALS CHARACTERISATION AND TESTING
- OCEANOGRAPHY, OCEAN ENGINEERING
- CHEMICAL ENGINEERING
- NUCLEAR MEDICINE AND MEDICAL IMAGING RADIOLOGY
- COMPUTER SCIENCE
- BIOMATERIALS
- MECHANICS
- ENVIRONMENTAL APPLICATION OF ENGINEERING
- MARINE ENGINEERING
- PHYSICAL GEOGRAPHY
- COMPOSITES MATERIALS SCIENCE
- FLUIDS AND PLASMAS PHYSICS

There has been steady decline in the staff strength of the Laboratory. Annual increase in the library budget and the corresponding growth in the collection is shown in Table 2. NPL staff strength in terms of scientific/technical personnel staff of the Laboratory is shown in Table 3.

**Table 2: Library Budget and Collection Statistics during 1999-2009**

YEAR	TOTAL BUDGET	EXPENDITURE ON JOURNALS Rs in Lakh	EXPENDITURE ON BOOKS Rs in Lakh	BOOKS PURCHASED	JOURNALS SUBSCRIBED	BOUND VOLS. ADDED
1999-2000	85.16	80.65	4.51	148	140	0
2000-2001	86.96	85.00	1.96	88	116	77
2001-2002	98.98	97.60	1.38	365	129	531
2002-2003	97.86	95.01	2.85	85	113	219
2003-2004	103.66	99.88	3.78	118	116	2
2004-2005	105.93	104.14	1.79	91	117	996
2005-2006	137.13	131.18	5.95	141	112	3210
2006-2007	104.56	99.07	5.49	220	109	2
2007-2008	98.68	93.52	5.16	122	106	1104
2008-2009	106.75	99.91	6.84	98	109	402

**Table 3: NPL Staff Strength during 1999-2009**

YEAR	Gr IV	Gr III	Gr II	Gr I	Admn Staff	Total
1999-2000	247	134	296	103	274	1054
2000-2001	242	126	284	100	267	1019
2001-2002	234	124	274	94	262	986
2002-2003	229	119	256	88	245	937
2003-2004	219	23	239	83	247	903
2004-2005	220	111	234	83	277	925
2005-2006	219	114	222	77	280	912
2006-2007	212	117	210	72	268	879
2007-2008	210	126	195	68	267	866
2008-2009	198	120	189	73	261	841

(Gr IV= Scientist, Gr III=Technical, Gr II=Technician, Gr I= Helping Hands)

## 5. COLLECTION DEVELOPMENT - BY TYPES OF MATERIAL

## 5.1 Books

Methods adopted for acquiring books are as follows:

- Selection through Catalogues/Books in Print/ bibliographies.
- Selection through book reviews appearing in periodicals such as-The Times literary Supplement (TLS), or book reviews from journals.
- Recommendations of the scientists/Researchers/Library users.
- Through books exhibitions within the institute; books displayed in the institute by vendors at regular intervals.
- Through book fairs.

Books are selected by individual scientists/researchers and their selections are put up before the Chairman, library committee consisting of members from different research groups. The Chairman, library committee takes into consideration the subject content of the books and the budget and also discuss with other committee members. After discussion among the members, selections get finalized. The committee recommends the purchase of selected books to the Director. The Director too gives a closer look to the list and approves the relevant documents. The final list of the books approved is received back by the library. All efforts are made to avoid purchase of duplicate copy of the books by checking the approved list with library catalogue. In this process of three tier filtering, the library is able to acquire only the most relevant books.

## 5.2 Journals / Periodicals

Periodicals are vital to the work of a research organisation, and these require judicious selection. Periodicals are more important than books for researchers and specialists. As research activities are worldwide and are increasing day by day, more and more periodicals are being published from all over the world with a view to disseminate the growing research information. According to an estimate, about one lakh Twenty five thousands periodicals are being published all over the world. (Statistical yearbook, Unesco, 2008) Selection of the most useful periodicals becomes extremely difficult because of huge number of titles covering the area of ones interest and high specialisation of individual journal. Moreover journal selection or acquisition is not a one time decision. To utilize the periodicals resources, a library has to have complete run of back volumes or at least five years' consecutive collection. Because of this special nature of periodicals, the financial burden spans through more than one year. The procedure followed in NPL library and the important considerations for acquiring a periodical are:

- The present and future research programs to be supported by the institute.
- The relative significance of particular journals in a subject area.
- The journals enjoying special patronage or preferences by the local clientele.

Periodicals are acquired by subscription, gift, and exchange or through institutional membership. However, majority of them are acquired through subscription directly from original publisher. At present the library subscribes to 109 periodicals in different sub disciplines, of which all are core journals.

## 5.3 Annual Reports / Technical Reports

Next to books and periodicals, the report literature is an important primary source of information particularly for a scientific library. This new medium for communication of information came into being during the World War II due to scarcity of paper, restrictions in distribution, and delay in bringing out periodicals. Reports not only solved the problems then, but proved quite useful even after the War. Reports may be either technical, (originating from R&D activity) or non-technical (reports issued from governmental or Non governmental agencies). The availability of large number of reports and their important, demands that care be taken to acquire, only those reports which are directly relevant to the research work of the organisation. In NPL library, reports receive directly from the issuing agency/Organisation on complimentary basis.

## 6. INFORMATION TECHNOLOGY TO SUPPLEMENT COLLECTION DEVELOPMENT

### 6.1 Network

It is said that now we are living in a 'global village', due to the impact of information technology. A similar situation is faced in the modern libraries and here we have 'libraries without walls'. At NPL library, this is achieved by participating in Delhi Library Network, Scientific & Industrial Research Network & also by accessing Internet. Network in its broadest sense means the electronic information access among interconnected nodes. When applied to library activity, it means anything from the organisational resource sharing agreements established among nearby libraries to automated networks such as those operated by bibliographic utilities. In one sense, networks existed even before the advent to information technology in the form of inter-library agreements (arrangements). But the modern technology brought efficiency into these arrangements. For example, from any one library which is member of the DELNET, one can access the catalogue of other member libraries. Other facility offered by DELNET is online list of currently subscribed periodicals in its member libraries.

### 6.2 Databases in the form CD ROMs

#### 6.2.1 INSPEC

As a leading English-language bibliographic information service, INSPEC provides access to the world's scientific and technical literature in physics, electrical engineering, electronics, communications, control engineering, computers and computing, and information technology. Currently, INSPEC covers over 4000 scientific and technical journals, 2000 conference proceedings, and numerous books, reports, and dissertations. INSPEC, which is produced by the Institution of Electrical Engineers (IEE) assists engineers, scientists, and others in their research to locate relevant journal ar-

ticles, conference papers, and other documents. In addition to providing a comprehensive index to literature in physics, electrical/electronic engineering, computing, control engineering, and information technology, INSPEC has significant coverage in areas such as materials science, oceanography, nuclear engineering, geophysics, biomedical engineering, and biophysics.

### 6.2.2 *Material Science Citation Index*

Materials Science Citation Index delivers current and retrospective bibliographic information and author abstracts from over 500 of the world's leading scholarly journals in materials science. It also reaches outside the core literature to provide coverage of related articles from the multidisciplinary ISI collection of over 8,000 of the world's premier scholarly journals.

**Key Advantages & Capabilities:** Allows users to conduct comprehensive searches of the materials science literature and related fields Provides cited reference searching, the unique ISI search and retrieval feature that enables users to track the literature forward, backward, and through the database, breaking through disciplinary and geographic boundaries Enables users to conduct multidisciplinary searches to discover hidden subject relationships.

### 6.2.3 *Current Contents/Physical, Chemical & Earth Sciences*

Current Contents/Physical, Chemical & Earth Sciences provides access to complete bibliographic information from articles, editorials, meeting abstracts, commentaries, and all other significant items in recently published editions of over 1,050 of the world's leading physical, chemical and earth sciences journals and books in broad range of categories.

**Key Advantages & Capabilities:** Helps users stay up-to-date in their research Provides a complete picture of today's global research in physical, chemical, and earth sciences by combining comprehensive coverage with numerous access points, exclusive search capabilities, and optional coverage of past research and proceedings data saves research time by providing one source for a variety of research data including author abstracts, author addresses, and more information per bibliographic record than in other resources.

### 6.2.4 *Current Contents/ Engineering, Computing & Technology*

Current Contents/Engineering, Computing & Technology provides access to complete bibliographic information from articles, editorials, meeting abstracts, commentaries, and all other significant items in recently published editions of over 1,110 of the world's leading engineering, computing & technology journals and books in a broad range of categories.

**Key Advantages & Capabilities:** Helps users stay up-to-date in their research Provides a complete picture of today's global research in engineering, computing, and technology by combining comprehensive coverage with meticulous indexing, exclusive search capabilities, and optional coverage of past research and proceedings data Saves research time by providing one source for a variety of research data including author abstracts, author addresses, and more information per bibliographic record than in other resources.

## 7. ONLINE ELECTRONIC DATABASES

### 7.1 Web of Science

Web of Science is an online database provided by Thomson Scientific. It provides access to five databases: Science Citation Index (SCI), Social science Citation Index (SSCI), Arts and Humanities Citation Index (A&HCI), Index Chemicus and Current Chemical reactions. Its databases cover about 8700 leading journals of science, technology, social sciences, arts and humanities. It's an integrated versatile research platform.

### 7.2 SCOPUS

SCOPUS is the largest abstract and citation database of research literature and quality web sources, it's designed to find the information scientist need. Quick easy and comprehensive, SCOPUS provides superiors support of the literature research process. Updated daily, Scopus offers 15000 peer reviewed journals from more than 4,000 publishes, over 1000 open access journals, 500 conference proceedings, over 600 trade publications, results from 386 million scientific web pages, alerts to keep you up to date on new articles matching your search query or by favorite author and many more

### 7.3 ScienceDirect

ScienceDirect is a leading full-text scientific database offering journal articles and book chapters from more than 2,500 peer-reviewed journals and more than 11,000 books. There are currently more than 9.5 million articles/chapters, a content base that is growing at a rate of almost 0.5 million additions per year.

Elsevier has digitized as much of the pre 1995 journal owned-content as possible, bringing articles from as far back as 1823 (The Lancet) to the desktop. Never has in-depth literature searching been so comprehensive and easy to find. The platform offers sophisticated search and retrieval functionality that enables the user to maximize the effectiveness of their knowledge discovery process. New tools facilitate research work flow aids such as access to content at an early publication stage and efficient multiple document downloading of content that can be stored, printed and passed to colleagues. The web environment offers new ways to present information as well as enhancing it with other content sources based on semantic technologies, e.g., NextBio. In addition, since 2003, many authors have been submitting extra value-added content associated with the research, such as audio and video files, datasets and other supplementary content, effectively accelerating research beyond the print format. ScienceDirect is a part of Elsevier. Headquartered in Amsterdam, The Netherlands, the company is the world's largest scientific, technical and medical information provider and publishes over 2,000 journals as well as books and secondary databases. Elsevier is a member of the Reed Elsevier plc group, a world-leading publisher and information provider. Operating in the scientific, legal and business-to-business sectors, Reed Elsevier provides high-quality and flexible information solutions to professional users, with increasing emphasis on the Internet as means of delivery.

## 7.4 Delphion

Delphion is a comprehensive and innovative patent research website. Delphion have searchable bibliographic data, full text data, and complete patent-images for patents issued by the United States Patent & Trademark Office (USPTO) (both applications and granted patents), World Intellectual Property Organization (WIPO) and European Patent Office (both applications and granted patents), bibliographic text from the INPADOC patent collection, and bibliographic text and representative images of Japanese patents. Delphion Research also offers a number of analytical and productivity tools to help you make the most of your research time and effort. Delphion offers a significant set of patent collections, including US Patents (applications and grants), European Patents (applications and grants), WIPO PCT patents, INPADOC, JAPIO, and the Derwent World Patent Index, with more on the way. These are easily searchable by patent number, assignee, inventor, abstract, title, or IPC class. Delphion gives you the patent collections & searching options you need to see inside the world's important patent databases.

## 8. OPTIONS AVAILABLE FOR A LIBRARY

The journals are available in various forms hence the libraries can subscribe to both the print and electronic journals. In certain cases the E-journal is supplied along with the annual CD of all the issues published during the year, thus the problem of archiving is solved. Some publishers restrict the distribution of E-journals only to libraries or only in departments or only on site, hence the publisher provides a library license/departmental license or consortia license depending upon the need and the terms of the contract. The librarian has to choose between one or more of the available options available such as:

- Print form
- Electronic form
- Both print and electronic forms
- Library license
- Site license
- Consortia license

Under the CSIR e-journals consortium programme, NISCAIR on behalf of the CSIR had an agreement with Elsevier Science with other reputed publisher in 2002 for online access to their 5500+ journals. This online access facility is operational to scientists in all the CSIR laboratories. Under the network project of CSIR this facility is going to be expanded to cover more publishers so that coverage of S & T literature further improves to 6500 + e-journals. It is believed that improved access to journal literature is going to have significant impact on the S&T research at CSIR labs in terms of quality and quantity of research output.

## 9. E-JOURNALS CONSORTIUM

CSIR ejournal consortium is a CSIR network project under the 10th five year plan, being implemented by National Institute of Science Communication and Information resources (NISCAIR), New Delhi. It aims at providing access to 5500+

world-class ejournals to the CSIR personnel through pooling and sharing of resources. A beginning in this direction was made on 10 June 2002 with CSIR entering into an agreement with M/S Elsevier Science to E-access their 1500+ journals at an add on cost of 9% of the subscription for the journals in the print form. This initial move met with tremendous success-the e-access of 400 unique titles, which were being earlier subscribed in print form only, became 11 times over a span of just two and half years subsequently steps were taken to achieve the set target of the project. The proposal was discussed in the task force meetings, finalized and submitted to the expenditure finance committee (EFC). The project was approved on 8 Mar 2004. Following this, negotiation committees were constituted, request for proposal was prepared and communicated to over 60 identified publishers. The offers received were prioritized keeping the CSIR requirements and expenditure involved in view. Finally agreement have been entered into with 11 publishers facilitating access to 3300+ world-class ejournals to all CSIR labs, as against their present base of 20-200 print journals. The expenditure on subscription of the ejournals for 2004-05 has been Rs 500,69,036.

## 10. CONCLUSION

Libraries today face a challenging task of meeting unlimited information demands of their users with limited financial resources. The demands of user are justified because of information explosion in every subject area. It is the balancing act of selective in-house collection development and use of information technology which can quench the thirst of research community. A step towards this has been taken at NPL library.

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