

II E. NATIONAL INFORMATION SYSTEM FOR SCIENCE AND TECHNOLOGY

1. INTRODUCTION

The increasing role of science and technology in the economic and social development of the country generated a pressing demand for faster technology transfer to the industries. In fact information centres serving the needs of different industries and R & D units, were therefore required to be coordinated and organized into an integrated system to avoid a haphazard growth and duplication of activities and to conform to national and international standards. In order to meet this requirement the National Information System for Science & Technology (NISSAT) was launched in 1977. In tune with the changing global scenario and in pursuance of the national efforts in liberalization and globalization of the economy, NISSAT reoriented its programme activities continually in order to be useful to a wider base of clientele in diverse subjects. Besides establishing the internal linkages between the information industry, its promoters and users, NISSAT also made efforts to establish a bridge between information resource developers and users in India and other countries.

The broad objectives of NISSAT were:

- ☞ Development of national information services
- ☞ Promotion of existing information systems & services
- ☞ Introduction of modern information handling tools & techniques
- ☞ Promotion of international cooperation in information
- ☞ Development of indigenous products & services

- ☞ Organization of skill development programmes
- ☞ Promotion of R & D in Information Science & Technology

1.1 Subject Coverage

The NISSAT programme had the mandate to cover the entire spectrum of science and technology. However, during the process of programme implementation, special care was taken not to dwell upon subjects already being handled by other national programmes like the BTIS, ENVIS or an agency like the ICAR. NISSAT always solicited the views of other programmes/agencies, which were responsible for a subject under the allocation of their business. NISSAT also sought the expert views of institutions/individuals working on a given subject or its allied areas when required. As a proactive and progressive step, NISSAT took the onus on itself to strengthen the library movement in the country through the introduction of modern information technology, tools and techniques.

1.2 Main Functions

The main functions of NISSAT has been:

- ☞ Strengthening of information services through Information Centres in Science and Technology, Value Added Patent Information Services, National Access Centres to International Database Services, CDROM Database facilities etc.

- ☞ Development of an Indian S&T Web server (Vigyan) covering a variety of Indian S&T information and establishment of an Internet School.
- ☞ Development of sector specific Indian websites like Tea, Ocean Data, Food & Technology, IPR Law, IPR on Biotechnology etc.
- ☞ Promotion of information resource sharing in Science and Technology through city-based library and information networks with emphasis on web-based information content development.
- ☞ Development of skills in entire gamut of library and information activities and promotion of development of indigenous database activities.
- ☞ Implementation of National Plan of action on Scientometrics/Bibliometrics and conduct of a series of R&D studies.
- ☞ Distribution and technical backup services on internationally developed software CDS/ISIS, MINISIS and IDAMS and development and promotion of CDS/ISIS based co-products like SANJAY.
- ☞ Coordination of international activities in collaboration with UNESCO and ASTINFO.
- ☞ Development of Information Market-marketing of information, revenue generation, Industry-User Interaction etc. and publication of the NISSAT Newsletter 'Information Today & Tomorrow'.

2. ACTIVITIES

2.1 Information development and services

2.1.1 National Information Centres

NISSAT established 14 national

information centres on specific sectors like Leather Technology, Drugs and Pharmaceuticals, Food Technology, Machine Tools Production and Engineering, Textiles & Allied Subjects, Chemicals and Allied Industries Advanced Ceramics, Crystallography, Bibliometrics, CD-ROM, Management Sciences, Marine and Aquatic Sciences, Publications on CD-ROMs, Tea Manufacturing & Marketing to provide bibliographic as well as factual and numeric information to meet the various information needs of academicians, scientists, technologists, entrepreneurs, management executives & decision makers. The information Centres were usually built around the existing information resources and facilities. They maintain extensive collections of published and unpublished documents in the form of books, periodicals, R&D reports, technical reports, standards, patents and trade literature in their subject areas.

During the period of report NISSAT is not provided any financial support to these centres. These services were largely maintained by the parent institutions during the year.

Tea Plantation and manufacturing is one of the traditional industries of India and an important livelihood for the people of North East and South. Tea is one of the major export items of the country. To facilitate timely information on latest techniques and practices in Tea Production & manufacture to decision makers, tea producers and scientists and to maintain linkages with various information centres including Tea

Research Information Centre in the country and abroad, a network with Tea board as nodal agency and (a) Tea Research Association (TRA), TOCKLAI, Jorhat, (b) UPASI Tea Research Foundation, Valparai, Coimbatore, (c) Institute of Himalayan Bio-Resource Technology (IHBRT), Palampur, Himachal Pradesh and (d) Darjeeling Tea Research Centre (DTRC), Kurseong as regional centres has been established during the period of report.

2.1.2 Virtual Information Centre

Setting up of a virtual Information Centre at ICICI Knowledge Park, Hyderabad is a three year project awarded to ICICI Knowledge Park (IKP) for providing a gateway to existing information centres and fast and reliable access to information and interaction among industry, academia and public research institutions in the area of Science & Technology. The project is divided into two phases. Phase 1 covers year 1 and Phase 2 covers years 2 & 3. Phase 1 of the project was basically delineating the need and usefulness of VIC, evolving structure and preparation of a detailed report on the scope of the work to be done at the VIC. During Phase 1 VIC has developed a virtual community and knowledge network, by identifying network partners, network users and customers and establishing a knowledge network. The centre has developed website (<http://www.vic-ikp.info>) for disseminating information. The site has information on "Network members resource database", Union catalogue of holdings of serials in IKP network

member institutions, Knowledge library, J-gate custom content for consortium, Directory of translators, Directory of IPR agents in India, Directory of email addresses of Indian Scientists, Event Database, Database of venture capital institutions and angel investors, etc. The activities of Phase 1 has been concluded logically during the period of report and Phase 2 has been initiated.

2.1.3 Scouting for grass-root level innovations, compilation and dissemination of information in local languages across India

Our country presents a rich fabric of innovative activities. While the innovative activities of established institutions are visible and receive attention, a vast reservoir of innovations by our farmers, artisans and tribals have often remained outside our consideration and appreciation. NISSAT initiated a project for a Knowledge Network using local language electronic database of Honey Bee network's green grassroots innovations. The project was evolved in the context of emerging national thrust of S&T system to contribute towards building knowledge driven economy. The project focuses on collection, documentation & development of a multilingual database on grass root innovations and development. The project would collect, document and digitize innovations and examples of outstanding traditional knowledge mainly from rural areas, organize these in a multimedia database, translate the information in local languages and establish a mechanism

for dissemination and sharing of information on innovations

2.2 NACIDS: National Access Centres to International Database Services

NISSAT established eleven NACIDS facilities in Ahmedabad, Bangalore, Calcutta, Chennai, Delhi, Hyderabad, Mumbai, Pune, Thiruvananthapuram, Guwahati and Bhopal for providing online facility to access international database services. The NACIDS provides search services from Dialog and STN databases. The centres are gaining popularity in spite of the fact that the users have to pay the full cost of a search. All the centres are now established and are absorbed by the parent institutions.

2.3 Web-based Activities

2.3.1 National server on factual Science and Technology Information

For promotion and support of S & T activities on one hand and execution of activities on the other, a variety of factual information (which is different from bibliographic information) is required. The project is intended to collect and collate such information from diverse sources, and host these on a server christened VIGYAN (<http://www.vigyan.org.in> or <http://144.16.72.160>) for national and international access. While the IISc has set up the server and manages the operations, several institutions are developing the contents such as:

- ☞ Extra-mural schemes of Government of India to support S & T activities: Administrative Staff College of India,

Hyderabad on the basis of information compiled by the NSTMIS, DST

- ☞ Database of Experts on Science & Technology in research and academic institutions, INFLIB-NET, Ahmedabad.
- ☞ R & D Statistics: Administrative Staff College of India, Hyderabad on the basis of information compiled by the NSTMIS, DST
- ☞ S & T News: Regional Research Laboratory, Trivandrum
- ☞ Faculty members in Engineering colleges: NAFEN, New Delhi
- ☞ Library materials: SNDDT University, Mumbai
- ☞ Policies relevant to S & T: NISSAT Secretariat

To sustain the server on a long term basis, an INTERNET School has been set up to generate the funds through conduct of specialized short term courses.

2.3.2 National Websites on S & T subjects

It is essential to develop endogenous capabilities for content development which has high potential in India in view of large S & T population having domain expertise, IT expertise and English proficiency. NISSAT has been aggressively nurturing various possibilities. Besides in pursuance of the recommendations of the Task Force on Information Technology, several National websites are being created for national and international access. Few examples are given below:

- ☞ Intellectual Property Rights (<http://www.iprlawindia.org>)

- ☞ Knowledge Management (<http://www.kmindia.org>)
- ☞ IPR in Biotechnology (<http://www.biotechpatents.org> or <http://www.vapis.org.in>)
- ☞ Indian Ocean (<http://www.inois.org>)
- ☞ Intellectual resources in Eastern India (<http://www.calibnet.org>)
- ☞ Food Science & Technology (<http://www.mylibnet.org>)
- ☞ Indian Tea (<http://www.indian tea.org>) in collaboration with five regional institutions
- ☞ TQM National Website (<http://www.indiantqm.com>)
- ☞ Indian Traditional Textile Design Website (<http://www.indiantextile design.com>)

2.3.3 *Vidyanidhi – A web-enabled full text database of Ph D thesis*

Young minds at their peak of creativity produce Ph D theses. Unfortunately these are least accessible, least accessed and utilized. The world over an effort is being made to capture and disseminate theses contents. NISSAT supported the Indian effort Vidyanidhi to experiment with various types of theses materials and establish the procedure for treatment. The materials will be web-enabled for wider access. The technology will be transferred to various Ph D awarding agencies for information handling and dissemination in a distributed mode.

2.3.5 *e-publishing of scholarly journals*

e-materials have the opportunity for higher exposure and utilization. Under the project, INSA to start with, would convert the back run of

their journal publications in e-format and establish a mechanism to publish the current journals also in e-format. After the activity stabilizes, INSA would invite/adopt journals of various professional bodies and institutions for publication in e-format.

2.4 Database Development Activities

In pursuance of its thrust on contents development, NISSAT encourages indigenous database development activities. Besides library catalogues, union catalogues and lists, the activity could be on subjects in which global databases do not exist, or on subjects in which Indian elements are not properly represented. NISSAT completed 11 database development projects such as Directory of manufacture of various kinds of Ferrous and Non-Ferrous and Special Castings, Biographical database of Indian Scientists, Indian Sugar Industry, Directory of Libraries and Information Centres in Gujarat, databases on Virus and Virology, Directory of S&T institutions in India, Database on Silkworms, Database on Agrochemicals Industry, Directory of Database on Engineering Faculty, SR Ranganathan's work and letters, Database on Folk wisdom, and Database on Indian Traditional Textile Design

2.5 Information Resource Sharing

With a mandate to facilitate provision of broad based information services in the country, NISSAT has taken initiatives for promoting resource-sharing activities through

Library Networks in Calcutta, Delhi, Mumbai, Pune, Ahmedabad and Mysore. These initiatives are aimed at ensuring better utilization of S&T information resources, minimization of functional load of information centres and encouragement of motivational factors to a large extent by better means of communication. Network services centres provide Online and CD-ROM based search services. These networks maintains websites to disseminate the information.

2.6 I T Applications

The demand for use of computers ranges from automation of routine management functions in libraries to information retrieval or analysis of global databases. Since the inception, NISSAT had accorded high priority to all aspects of computer based bibliographic information processing. As a part of the programme, NISSAT acquired proven software packages like CDS/ISIS for bibliographic information processing & retrieval and IDAMS for statistical data processing. NISSAT subsequently obtained the official rights for distribution of the two packages in India from UNESCO.

As on date, there are about 1940 installations of CDS/ISIS and 100 installations of IDAMS in India. The implementation of CDS/ISIS is monitored regularly through exchange of information, user's group meetings (eight such meetings have been held so far) and periodic surveys.

SANJAY is a package developed by NISSAT to help the libraries and

information centres in India to improve their housekeeping and service functions through automation. The package is totally menu driven and can be used even by non-professionals. The package was released for marketing in September 1995, and till now it has an installation base of 65 sites. During the current year the development of SANJAY under windows environment with LAN support has been completed.

2.7 Development of Skills in Information Science and Technology

Existing library and information science courses cannot keep pace with the rapid developments in the information field; there is a need to supplement these with continuing education programme at various levels. In view of the situation, NISSAT encourages and supports a variety of manpower development programmes which cover topics such as CDS/ISIS, WINISIS, Internet and Web Designing, TQM in Library Services, Patent Information for R&D and Industry, ISO 9000 Quality Management System, etc.

2.7.1 Post Graduate course on Information and Knowledge Management

Information collection, collation, consolidation, packaging etc is getting more and more difficult due to proliferation of information sources and ever-developing tools and techniques for information handling. The users demands have also matured. Besides, the institutions and corporates are in dire

need to systematically capture, package and share “in-house” information and experiences (Tacit knowledge) to subsist in this competitive world. Traditional university education is not geared up to prepare the students in the new art of IK Management. The management institutions today conduct only short-term courses to give the first exposure. Realizing the need, a pilot market-driven Post-Graduate course has been designed in collaboration with National Centre for Science Information (NCSI), Indian Institute of Science, Bangalore to evolve a model that can fill in the gap in professional manpower demand and supply and can be replicated elsewhere.

2.7.2 Model (Software and procedure) for web-driven distance education system

The NISSAT in collaboration with Indira Gandhi National Open University, New Delhi initiated a project to evolve a model that would include online lectures, chat discussions with experts, online submission and evaluation of exercises etc. Initially, for experiment, training on WINISIS a text management software would be tried. Afterwards, the IGNOU would use it for its own courses and transfer the technology to other institutions conducting distance education courses.

2.8 R&D Studies/Surveys

2.8.1 Studies on Productivity of Indian S & T

Quantitative assessment of the output

of research & development is a difficult exercise. Hitherto only mundane physical and financial parameters were being used. The scientometric studies of NISSAT used publication pattern and citation pattern for national mapping in various subjects (as defined by the prime database on a specific subject). In order to study the trends ten studies on “whole range of S & T through SCI scan”, Chemistry and Chemical Engineering, Physics, Biosciences, Mathematics, Geosciences, Agriculture, Medical Science, Indian Patent Literature, and Social Sciences were taken up.

2.8.2 Other Studies

NISSAT also promotes and supports research and development and survey studies. During the period of report NISSAT completed a study on "Assessment of Information Needs of Small and Medium Enterprises in MP and setting up of information centres for fulfilling those needs". The focus of the project is to promote the use of information technology for SMEs by increasing their awareness levels by bringing the information providers and the clientele together. Two studies on “Food Informatics and Training Opportunities in Food Technology Networking (FITOFTN) and Digital library of Natural History of Collections were taken up.

2.9 Publications

NISSAT has been bringing out its *NISSAT Newsletter* -- a quarterly newsletter since the beginning of the programme. Over the years, the format has undergone several

revisions in keeping with the changing information scenario. Now, the contents include information on new tools and techniques, events concluded and announcements, interesting Internet sites, new database products and services. With a change in the title, *Information Today & Tomorrow (ITT)*, the quarterly periodical is distributed free to 5000 individuals and institutions.

3 CLOSURE OF SCHEME

The scheme has not been included as a component of the Tenth Plan as the Planning Commission under the Zero Based Budget Procedure has weeded it out. Though, it has not been possible to provide financial assistance to many of the projects during 2002-03, most of them continued their activities and provided services.