SCIENCE & INFORMATION TECHNOLOGY FOR THE SOCIO-ECONOMIC DEVELOPMENT

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The division of the world into developed and developing countries is the outcome of technological advances generated and used in a few countries mainly belonging to the north half of the globe. Through technological development these countries have achieved industrialisation which has led them to dramatic improvements in the living conditions, where as the developing countries are still striving to achieve fundamental milestones of well being for them, which have long been taken for granted in the industrialised countries.

Information is a much sought after and a highly valued commodity these days. **Information** is defined as the knowledge that resides in the human brain, in all electronic and written records, and potentially, in physical artifacts.[1] According to a Unesco study prepared by the International Institute of Communication, "Information is seen as a collection of many heterogeneous goods and services that together comprise an activity; this information actively includes all the resources used for production, processing and distribution of information goods and services".

The whole world is moving towards an information society. Hence we have to equip ourselves to transform the country into an information society which may be called an information public which uses information for improving economy, creating competitive products and to be an effective citizen of the country. The world has become increasingly dependent on information for its economic growth as well as the quality of individual lives. Information has become the glue that holds the society together.

On the other hand information society will have a physical infrastructure to transfer information. But this will create a new problem, i.e. a new stratification of society, those who have and have no access and facilities. The electronic revolution, combined with the communication technology has made the production, transmission and processing of information the fulcrum of all the national and international economic and social life.

These developments have put even a greater distance between the developing and the developed world. Theoretically this should have been a greater equalizer or leveler in our split-level between the developed and developing countries. However the fact that information gap between the sides is widening very much is not only due to the continuous addition of information to the data banks and data bases in the industrialised countries, but also due to the substantial exchange of information among them. Large volumes of valuable data for economic growth as well as for scientific research and development move continuously at a high speed among these developed countries. Such data collection and exchange is almost non-existent in and among developing countries.

In the developed world, use of information is fairly extensive and becoming increasingly popular. For many in the West information is accessible only with a telephone call or computer terminal away. They have access to information services, either free or fee based. International corporation have set up their own information collection and processing systems. In contrast, in developing countries the use of information in modern sense of meaning is non existent. The vast majority of the people do not know where the information is available and how to access them. Often they do not know where to turn when they have information.

A few developed countries today dominate developing countries. Control of information and the fast developing communication systems have made it possible. Developed countries and Transnational Corporations have access to information in developing countries through remote sensing satellites and computerised data banks.

In order to break through this situation developing countries have called for a variety of changes. Their attempt in industrialisation and socio economic development has resulted in the emergence of newly industrialised economies in Asia. Easy access to specialised and on-line retrieval systems has placed a powerful tool in the hands of government decision-makers, researchers and businessmen. Their main concerns have been on human resource development, research and development (R&D) and indigenous technology development for transforming natural resources to consumable products. Many attempts have been made to develop the

capacity to generate, collect, organise and use national information and to access scientific and technological knowledge and expertise

Challenges of the Future

The major challenges information scientists will face in the late 20th century are the following:

- Ø determining the extent to which information systems can be made easy for non-specialists to understand and use;
- Ø devising ways in which infor mation systems can assist indi viduals and groups, including governments, to solve problems; and
- Ø furthering understanding of human thought processes in or der to develop universal intel lectual networks to serve and advance both the individual and society

The library is only one of several alternative sites for information storage and services. There may be other systems based in information banks, archives, switching centers, or organizations such as schools and businesses.

Information service is one of the fields, which is rapidly progressing and will continue to do so in the 21st century. Hence the Scientific and Technical information workers must base their work on S & T information and be geared to the needs of the society, taking into consideration that the fulfillment of user's requirements as their key function. They also should aim at providing deep processed information to the decision-makers of all strata. This kind of information service is of high added value.

S & T Information services in Sri Lanka

The establishment of Sri Lanka Scientific and Technical Information Centre (SLSTIC) at the National Science Foundation (Formerly NARESA & NSC) had a major impact on the dissemination of S & T information in Sri Lanka. SLSTIC started using computers for information processing in 1978, followed by four more information centres by 1984. Presently 50% of the special libraries in Sri Lanka are using computers at least for their house keeping activities. Some of them are also using CD ROMs and Internet to enhance their services and to get current information.

There has been a great deal of interest in utilising new information technologies among S & T libraries in the recent past. As a result of this many of them are using E-Mail facility for the exchange of information. In addition CD-ROM technology is also widely used instead of on-line databases which are not affordable due to high cost and low budgets. The Internet, which is fast becoming very popular among scientists and researchers, has forced information managers to rethink about their services. Although all major Universities are connected to Internet through 64kbps lease line, the libraries of these Universities are still not connected to the Information Superhighway, But many of them have a website having at least the basic information about their services. SLSTIC has been able to provide an online database on research funded by NSF and International Irrigation Management Institute (IIMI) has its catalogue online on Internet (http://www.cgiar.com).

Sri Lanka Scientific & Technical Information Centre (SLSTIC)

NSF (former NARESA) established the **Sri Lanka S & T Information Centre** (SLSTIC) in 1979. SLSTIC was identified as the national focal point for dissemination of S & T information. Hence SLSTIC established the Sri Lanka S & T Information Network (SLSTINET) which has a membership of more than 100 S&T libraries. SLSTINET was developed as the umbrella network of all national S & T information networks in Sri Lanka; namely:

- AGRINET - Agriculture Information Network
- HELLIS - Health Literature, Library & Information Systems
- ENLINET - Environmental Library Network
- TECHNINET - Technical Information Network
- The key objectives of SLSTINET are:

* **to support and build an effective information infra structure in the field of S & T**
* **to take the lead in the organisation of information on the S & T subset of the national information super highway**
* **to help end users to define their needs, learn to use the available system and gain access to the information need**
* **to share resources available at member libraries**

To achieve these objectives SLSTIC developed a Computerised Information Network for the exchange of S & T Information with SLSTIC as the pilot co-ordinating site funded by SAREC (Swedish Agency for Research Corporation in Developing Countries) in 1995. SLSTIC has developed the mechanism to store, access, retrieve and utilise information, which in turn has helped to develop its **resources, services & activities. SLSTIC** has been able to enhance its services utilising Information Technologies with the help of this ongoing foreign funded project.

Resources

A Local Area Network (LAN) running on Novel 4.1 has been fully implemented with fifteen workstations with five multimedia PCs on the network with a server. All the workstations are configured to access the Novel Server (through IPX) as well as the Internet (through IP).

Internet on-line

NSF Local Area Network is connected to LEARN (Lanka Educational Academic and Research Network) hub at the Sri Lanka Telecom (SLT) through a 64 kbps leased data circuit providing on-line connectivity to the Internet.

Webserver "VIDYA" provides an online database of all the research coordinated by NSF. A remote access server is being configured to provide access to remote R & D institutions in Sri Lanka.

Network Access

All the members of the NSF staff have been assigned with access facilities to the Network with exclusive work space on the network.

Users can log into the Novell server and they can easily select any CD database or local database (maintained by NSF) or Internet facilities such as the E-mail, Gopher, FTP, Telnet and the WWW. Remote network access is provided through a dial in router.

Data Base Development

Instead of building up a comprehensive collection of books and periodicals SLSTIC pays more attention in developing a collection of reference books which are not available in other network libraries. As the national Information Centre SLSTIC 's main emphasis is to collect, process and disseminate S & T information among local users (Scientists & Researchers). To fulfil this SLSTIC has developed the following data bases.

⊙ **UNILIST** Union list of periodicals available in Sri Lankan libraries

⊙ **SLSTEP** Directory of S&T Personnel in Sri Lanka.

⊙ **SLSI** Sri Lanka Science Index (includes local Pamphlets, Reports and Seminar proceedings on S & T).

⊙ **DBOSR** Ongoing research in Sri Lanka (updated every year).

⊙ **SLSTIC** SLSTIC library collection

⊙ **RGRA** S & T research sponsored by NSF (this is now online on Internet - Vidya)

⊙ **FLORA** Data base on plants exported from Sri Lanka

⊙ **COMMED** Community medicine database

In addition to these databases arrangements have been made to survey present status on climatic information in Sri Lanka and to develop a database on databases.

Users at NSF can access the information through a menu which makes it easy for them even without networking knowledge. Users of the library can access these databases through a general account. Two workstations are available for this at the library.

Services
Retrieval of information through CD-ROMs

CD ROM technology is being extensively used for information repackaging on the request of researchers and scientists.

Membership at SLSTIC

Presently a membership scheme has been introduced. This includes three types of membership:

Institutional Membership
Personal Membership
Student Membership

In addition, a remote search service was also initiated for the benefit of those who do not have on line access at present. Presently requests for searches on these databases are accepted from the remote member Institutes through a general E-mail account and the search results transferred via E-mail.

Publicity through Internet

NSF home page at the NSF WWW server **(http://www.naresa.ac.lk)** is maintained by SLSTIC. This page contains a comprehensive description of all the activities of NSF. Since NSF is the only S&T institution online on the Internet for the moment, it has undertaken to publish home pages for other S&T institutions in Sri Lanka and at present is keeping brief pages for 16 institutes. NSF also maintains home pages for the following member Institutions on its server:

- Alcohol & Drug Information Centre
- Birth Research Unit
- CISIR
- Coconut Research Institute
- Geological Survey & Mines Bureau
- National Aquatic Resources Agency
- Sri Lanka Association for the Advancement of Science
- Sri Lanka Institute of Architects
- Sri Lanka Standards Institute
- Sri Lanka Library Association

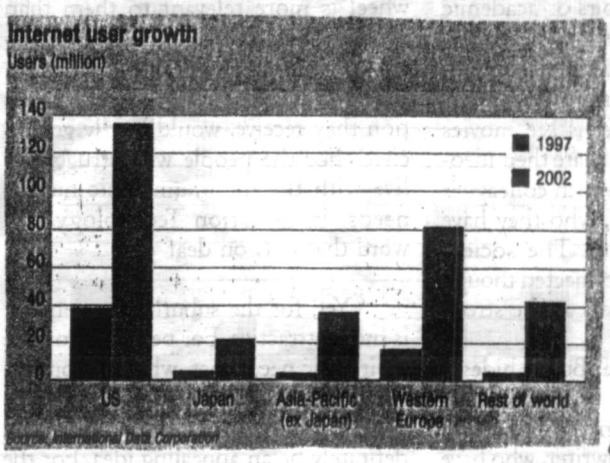
Activities
Workshops and Seminars

Workshops/Seminars and demonstrations for the scientific community is an ongoing activity organised by SLSTIC. These are aimed at creating an awareness about the services available at NSF among the scientific community. Seminars on retrieval of information through CD ROMs and Internet, is also a continuing activity to update the knowledge of Scientists and Information Officers on the utilisation of new technologies.

In addition to these, SLSTIC has been appointed by UNESCO as the National distributor of CDS/ISIS software, which is being used by the majority of Sri Lankan libraries for library automation. As the national distributor of this software SLSTIC has been actively engaged in publishing handbooks to assist the users. Presently the following publications are available:

CDS/ISIS Simplified manual
Common Bibliographic Format for CDS/ISIS

SLSTIC also has been able to provide an integrated library automation system "PURNA" to enable the libraries using this software to develop their data bases. This package was introduced only in November 1997 and to date about 35 libraries are using it.



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Future Plans

SLSTIC has planned to develop a Wide Area Network (WAN) among SLSTINET libraries using the dial-in facility, so that the other S & T Institutes will have remote access to the resources available at SLSTIC. Already the dial in server has been configured and telephone lines acquired.

LAN along Vidya Mawatha: SLSTIC also intends to expand its LAN by linking up with the Research Institutes in NSF's locality (along Vidya Mw.) through fibre optic lines.

Conclusions

Although there has been some developments in the field of S & T Information services during last two decades, more emphasis should be placed in the establishment of a Scientific Literature Services Centre with the following objectives:

- To coordinate the information systems and services, developing their areas of strength, identifying and correcting deficiencies in the services, fulfilling gaps, and interacting productively with the regional and international information systems and programmes
- To provide relevant, reliable and timely information and data at a reasonable cost to the research community, development planners, industrialists, entrepreneurs, extension workers
- To ensure effective and efficient sharing of knowledge and expertise available globally for the attainment of national development goals
- To establish and maintain at a national level documentation, dissemination and exchange of research output and non conventional literature materials
- To promote networking and resource sharing
- To publish reference tools relevant to the needs of the national research

Information has been and will always be a major source of power when it is used only. Otherwise, it is like a thought that remains stillborn. One has to know what information is available, where, in what form and how to access it. It is important to know not only how to collect, process but also how to use information, which are the inseparable components of today's information theory.

[1] "Information Science," *Microsoft Encarta 98 Encyclopedia.* © 1993-1997 Microsoft Corporation.