

AUTOMATED INFORMATION SYSTEMS AT SLSTIC

N.U. YAPA

*Director/Information, Natural Resources, Energy & Science Authority
of Sri Lanka, 47/5, Maitland Place, Colombo 7.*

The Sri Lanka Scientific and Technical Information Centre (SLSTIC) which is a division of the Natural Resources, Energy and Science Authority of Sri Lanka, acts as the national coordinating centre for scientific information activities. It promotes cooperation among libraries and helps them to develop their resources.

The Information services of SLSTIC were initiated as manual systems. But in January 1983, SLSTIC installed a mini-computer, WANG MVP 2200, with 64K memory and 10MB online storage. Action was taken to convert some of the services, on a priority basis, into automated systems. SLSTIC hence became the first library facility to operate computerized information systems in Sri Lanka.

The Information services offered by SLSTIC could be broadly divided into two categories:

- (a) Services that are aimed at exchange of information at the International level.
- (b) Services that are organized for the promotion of cooperation among libraries at the National level.

Any information system, manual or automated, involves 5 major operations: (a) collection (b) organization (c) storage (d) retrieval (e) dissemination. These function could be done manually or mechanically. In a fully automated system, all the operations are performed by using computer and telecommunication techniques. SLSTIC uses computer facilities in some of the operations such as storage and retrieval. Hence, information systems of SLSTIC fall into the category of semi-automated systems.

These two categories of services comply with the two information programmes launched by UNESCO namely, UNISIST and NATIS. The main objective of the UNISIST programme is to establish a mechanism for the global transfer and exchange of scientific information. According to this programme, each country designates a National Scientific Information Centre to serve as the national focal point of the global information network. The National centre is responsible for collection and dissemination of information about scientific resources of the country. Inventories of scientific resources such as scientific literature, scientific manpower, scientific institutions and scientific research projects are prepared by the focal point. SLSTIC/NARESA is actively engaged in the preparation of these inventories.

The operations described above could be organized at two levels: (a) Network operation, when a number of libraries jointly carry out an operation (b) Domestic operation, when the work is confined to one's own library. Network operations are possible if the participating libraries adopt common procedures and standards. A fully automated information system for a library network is possible if all the operations of the system are done using computer and telecommunication capabilities and if, common standards and procedures are adopted by the libraries participating in the network.

The second category of information service, i.e. services aimed at promotion of library cooperation at the national level, are organized in keeping with the NATIS objectives. According to NATIS, the national focal point is responsible for the establishment of a national scientific information network. SLSTIC has created the Sri Lanka Scientific and Technical Information Network (SLSTINET) to promote cooperation among scientific libraries. Within SLSTINET a number of subject-oriented sub-systems are created for agriculture, health sciences and renewable energy. Compilation of Union Catalogues, exchange of current periodicals contents pages, cooperative acquisition plans are some of the services organized by SLSTIC to promote library cooperation.

Two information systems, one involved with network operations and the other, with domestic operations, are described below to illustrate the organization and performance of computer-assisted information systems of SLSTIC.

(1) Union Catalogue (UNICAST)

Union Catalogue of Scientific and Technical Books in Sri Lanka Libraries (UNICAST) is one of the major information services of SLSTIC. The main objective of the service is to compile a composite catalogue of scientific and technical books available in the libraries in Sri Lanka. About 30 libraries participate in

UNICAST by sending information about books acquired by them to SLSTIC. The Union Catalogue helps to find out which library has a particular book.

Upto 1983, UNICAST was organized as a card catalogue arranged alphabetically by author. It could be used only for searching a book by a known author. In 1983 the UNICAST data base was computerized.

The collection and organization of information for the Union Catalogue is done in 3 stages:

- I. preparation of catalogue entries by the participating libraries according to their own practice. One catalogue card for each book is sent to SLSTIC.
- II. conversion of bibliographic information in the catalogue card into a standardized format at SLSTIC.
- III. appending the Union Catalogue.

Before SLSTIC installed its computer, these operations were done manually. Since libraries adopt different cataloguing and classification practices, it was necessary to convert the bibliographical information received from other libraries into a standard format at SLSTIC. Since this was time consuming and sometimes not possible without examining the book concerned, only the most important elements in the catalogue entry were converted into the standardise formats.

At present, conversion of bibliographic information into a standardised format is done at SLSTIC by recording the information in input sheets. Input sheets are used to enter data into the computer to append the UNICAST database. Hence, the three stages mentioned above could be re-defined, with respect to UNICAST data base, in the following manner:

- I. preparation of catalogue cards by libraries according to their own practice.
- II. preparation of input sheets according to the standard format.
- III. input data into the computer.

Many participating libraries have agreed to carry out stage II at their own libraries. Such libraries now send input sheets, instead of catalogue cards, for the books acquired by them.

Stages II and III could be combined if a participating library follows the same bibliographic format adopted by SLSTIC. This means that all participating libraries are required to follow the same bibliographic format. Attempts are being made at the national level, to bring all the libraries into an agreement of adopting a standard cataloguing practice. This would involve training of staff, conversion of catalogues, purchase of new manuals, equipment, etc.

The input sheets are used by Data-entry operators at SLSTIC to input data to the computer. It would be possible in the future, when participating libraries acquire computers which could be connected to the computer at SLSTIC through telecommunication networks, to carry out stage III at their own libraries.

SLSTIC, at present, faces two limitations with regard to the growth of the UNICAST data base. These limitations could be attributed to the configuration of the WANG MVP 2200 computer. The two limitations are:

1.1 the length of a record is limited to 256 characters. Hence SLSTIC had to design the bibliographic format with a maximum of 256 characters. Two internationally recognized bibliographic formats, UNIMARC and UNISIST formats hence could not be used for UNICAST. In order to overcome this difficulty, SLSTIC decided to simplify the bibliographic format by omitting certain bibliographic data elements. Major simplifications are as follows:

- (a) restriction of entries to monographs.
- (b) restriction of persons responsible for the contents of the books to two persons.
- (c) using same field for both persons and corporate bodies. Type of authority is identified by a tag.
- (d) restriction of the length of the title to 80 characters.
- (e) omission of notes and series areas.

The SLSI data base was created in 1983 to enter information pertaining to the Sri Lanka Science Index. The index entries are input directly to the computer. Entries for a given quarter are sorted for the production of SLSI quarterly bulletin.

In addition to the limitations mentioned under UNICAST, with respect to the SLSI data bases SLSTIC encountered the problem of entering information about documents issued in Sinhala.

WANG MVP 2200 had no facility to define special characters for printing and displaying. This limitation was overcome by formulating a transliterations scheme. Standard transliteration schemes were not helpful as diacritical marks cannot be produced by the SLSTIC's computer. Hence, it was decided to use a special transliteration scheme for storage of data and to insert typed scripts in Sinhala in the print-outs.

Since SLSTIC was the first library facility in Sri Lanka to use computer for information processing and since the computer owned by SLSTIC had certain limitations, the following problems were encountered by SLSTIC.

- (a) Non-availability of software packages - this was envisaged and system analysis and programming work were initiated long before the computer was installed. Hence it was possible for SLSTIC to run the basic programmes soon after the computer was installed.
- (b) Lack of trained personnel - Computer needs personnel at different levels. Data base management, systems analysis, programming and data entry operation are considered as different levels of operations relating to computers. Due to lack of personnel some of these functions had to be combined.
- (c) Lack of facilities for network operations- Networks established using telecommunication capabilities are used to transfer and exchange information between computers. Data stored in one computer could be used by another computer for its own processing. This ensures accuracy and avoids wasteful duplication of effort. Due to the limitation in the computer configuration owned by SLSTIC, it would not be possible to use the network technique effectively.

In a few years from now, it is envisaged that a number of libraries will start automated information systems. Experience and knowledge gained by SLSTIC in the creation and operation

of information systems would be useful to these libraries.

1.2 On-line disk storage capacity of UNICAST had to be restricted to 5MB (equivalent to 10,000 records). Hence UNICAST will be organized into a number of files each containing information about 10,000 books. This process would slow-down the retrieval operations as for a retrospective search, each file has to be searched separately.

2. Sri Lanka Science Index

The Sri Lanka Science Index is compiled to index the local output of Scientific Literature. Three document collections are created for this purpose:

- (a) National Scientific reports depository, includes published and unpublished documents relating to Sri Lanka (conference documents, research reports, technical reports are included).
- (b) Sri Lanka Scientific periodicals collection: contains scientific journals published in Sri Lanka.
- (c) Scientific newspaper clippings - collection of scientific and technical articles published in local newspapers.

The scientific documents are indexed using Universal Decimal Classification scheme (4th edition and extension codes). Each article is given a specific and detailed UDC number. The bibliographic depository is prepared according to ISO 690/1975 with minor modifications.

For the manual system the index entries are prepared in cards and the cards for a particular quarterly period are arranged under broad subject headings for the purpose of production of the SLSI quarterly bulletin. When the quarterly bulletin is compiled, the cards are inter-filed in the central index.