NAME OF SYSTEM:

NASA-RECON Automated Reference

ORIGINATOR:

Office of Technology Utilization

Scientific & Technological Information Division

National Aeronautics and Space Administration (NASA)

Washington, D.C. 20546

OBJECTIVE. To develop a document reference system that will increase efficiency in the dissemination and use of NASA's large collection of scientific and technical information.

BACKGROUND. Since 1958 NASA has been discovering new things about materials, machinery, and human beings, as well as about the earth, the moon and the universe. The responsibility for collecting, maintaining, and identifying the documentary results of these worldwide aerospace research activities rests with NASA's Scientific and Technical Information Division. In performing these most important duties the Division personnel summarize, index, and store this wealth of knowledge for the benefit of a broad array of people associated with scientific and technical pursuits. Each day the NASA Scientific and Technical Information Facility at College Park, Md., receives hundreds of scientific and technical documents. These papers are promptly checked to avoid duplication and examined for relevance. Professional indexers examine each document as it enters the system and record its appropriate reference data, including selection of authorized indexing terms. Trained abstractors then write a short but valid resume of the document's contents in cases where such action has not been taken previously. After a final review, the complete bibliographic record is entered into the memory of a high-speed electronic computer.

NASA's current information file numbers several hundred thousand documents, with most of the material maintained in microform. An analysis of the various users of this large body of information shows that NASA and its related industrial firms are involved in 60 percent of the total research inquiries. The academic community follows with 21 percent, and other Government agencies and foreign users are involved in the remaining 19 percent.

With the continuous growth of the Central File's accessioned scientific and technical material, researchers were spending an increasing portion of their time in locating meaningful document information. To alleviate this condition, the NASA authorities established the RECON system after an in-depth study of advancements in computerized information retrieval applications.

THE NEW METHOD. The NASA-RECON (*RE*mote *CON*trol) Automated Reference System consists of a high-speed computer and its stored bank of reference information located at College Park, Md., plus 21 remote information terminals located at selected aerospace centers throughout the United States. Each terminal complex includes a keyboard for entering queries into the system, a cathode-ray tube (CRT) for visual display, and a teleprinter for printout. The system has the capability of giving the NASA scientists and engineer users real-time, on-line machine access to specific reference data pertaining to NASA's Information Facility.

In preparing to use the RECON system's bibliographic data, the user must choose his inquiry terms from the NASA Thesaurus (list of indexing terms), available at each terminal location. This Thesaurus contains several thousand terms, many of which specifically relate to aerospace disciplines. Aside from these alphabetically-arranged terms, several related appendixes are also included in the same volume. These are a permuted KWIC (keyword-in-context) index; a list of subject terms by subcategories, and a heirarchical display of broad and narrow terms. Each of these index lists was developed to assist the user in determining which terms to use when conducting his search.

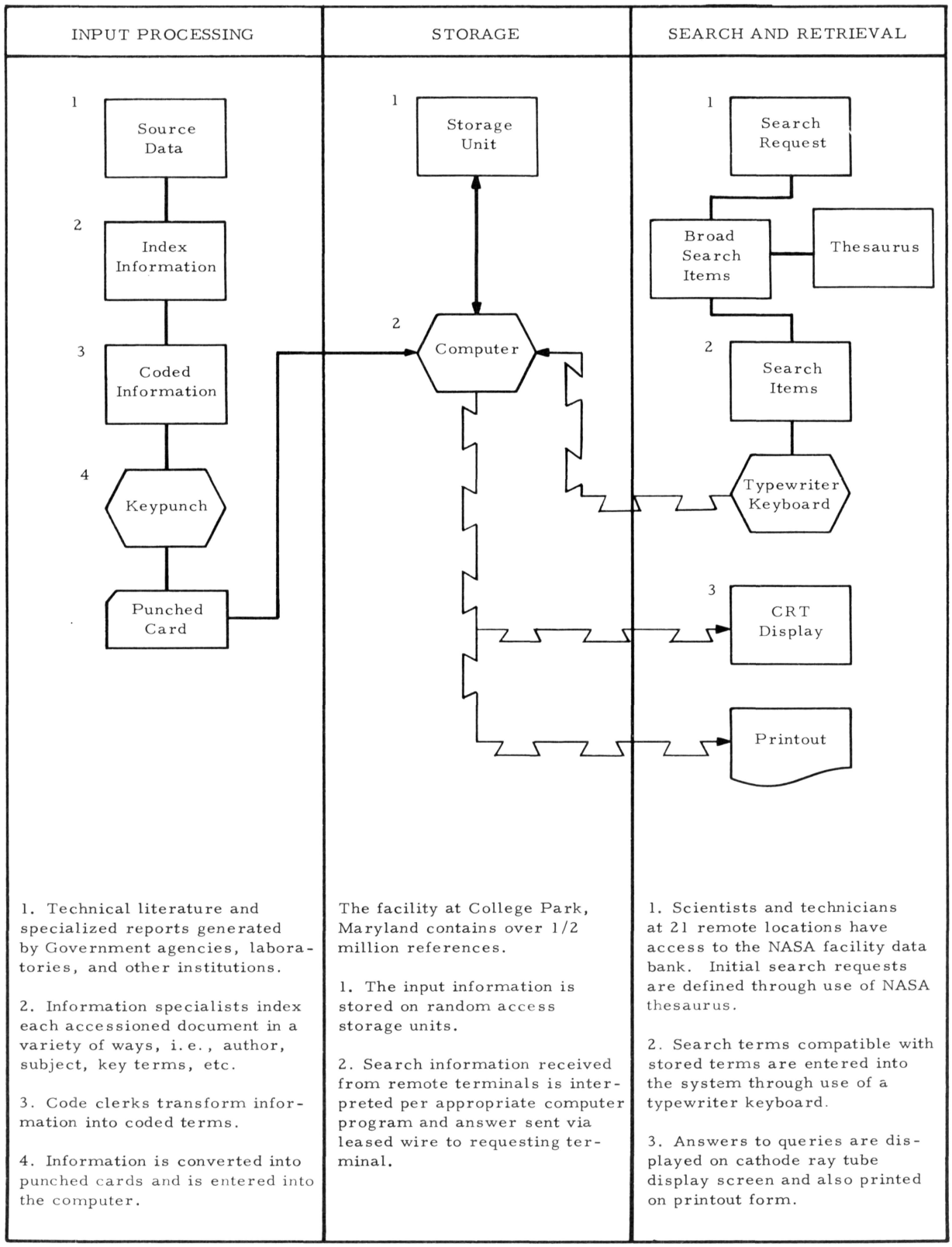
The user starts the search by entering his identification code on the console keyboard and then typing out his search question. Within seconds the bibliographic replies are displayed on the CRT. Depending upon the user's input query, the answer might cover accession numbers and titles, or display a catalog listing of information on a particular scientific discipline. If the list is long, he can instruct the computer to printout the selected citations on a printer located next to the CRT.

As an example of the system's flexibility, suppose a user needed detailed information on an ultrahigh-frequency radio transmitter used on a Lincoln Experimental Satellite. The search could be conducted under three indexing terms: Lincoln Experimental Satellites, ultrahigh frequency, and radio transmitters, terms that can be recognized by the computer. In response to how many documents were indexed under these terms, the CRT display showed ten under the first, 93 under the second, and 110 under the third. The computer could then be asked to display the titles, authors' names and other information on each of the three sets of terms. However, this action would be impractical due to the number of reports. To save time, the computer could be asked to cite the number of documents indexed under all three terms. The computer's reply would quickly reveal on the CRT display that only one document was indexed under the three terms specified. By pushing another button the CRT would show that the item was a 26-page report, dated July 19, 1968, and prepared by Dr. R. E. Jones. With this information, the user would be able to obtain an abstract of the paper or a microfiche copy of the complete report.

REMARKS. This real-time, on-line, time-sharing automated information system with remote access terminals possesses a wide range of coordinate reference capabilities. With proper search preparation on the part of the user, it can be used to correlate and manipulate reference data in a variety of ways to achieve search satisfaction. Its great speed and search flexibility reduce the search time of hundreds of scientists and technicians to a minimum and thus afford them a higher percentage of time for more creative pursuits.

Costs for development, acquisition, and operation of such a sophisticated system are high in relation to other automated retrieval systems. In time, such costs will become lower and thus more competitive as improvements in hardware and programing occur.

NASA/RECON AUTOMATED REFERENCE



1. Technical literature and specialized reports generated by Government agencies, laboratories, and other institutions.

2. Information specialists index each accessioned document in a variety of ways, i.e., author, subject, key terms, etc.

3. Code clerks transform information into coded terms.

4. Information is converted into punched cards and is entered into the computer.

The facility at College Park, Maryland contains over 1/2 million references.

1. The input information is stored on random access storage units.

2. Search information received from remote terminals is interpreted per appropriate computer program and answer sent via leased wire to requesting terminal.

1. Scientists and technicians at 21 remote locations have access to the NASA facility data bank. Initial search requests are defined through use of NASA thesaurus.

2. Search terms compatible with stored terms are entered into the system through use of a typewriter keyboard.

3. Answers to queries are displayed on cathode ray tube display screen and also printed on printout form.