

Archival Potential of Machine-Readable Records in Business

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BUSINESS USE OF THE COMPUTER began with the processing of numerical data for repetitive clerical work in order to produce earlier and more accurate statements, summaries, and reports. Information was gathered from the points where it originated and was processed on the central computer. The computer output included such items as inventory records, customer billings, and payroll records. The system made it possible to produce relevant records quickly. The summaries and statements prepared by the computer permitted analysis of results earlier so that management could be informed of them sooner through the appropriate reports, although early experiences brought their share of frustration and disappointments.

Along with their application to repetitive business processes, computers were used also in solving engineering and scientific problems. This use reduced the time needed to make engineering calculations evaluating alternative proposals regarding both operation of the system and the design of required new facilities. The answers derived were incorporated in the reports and recommendations regarding the most appropriate course to adopt.

The early use of machine-readable records in both business and engineering work thus provided data ready to incorporate in the various summaries and reports required in the business and produced the detailed records for those applications of the computer. Machine-readable records were essentially tools for manipulating and writing. The historically valuable data from these uses are preserved in the periodic reports and summaries prepared from the data. The cards and tapes were superseded and the machine-

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readable records erased after they were no longer needed to manipulate the data or for anything else. In addition the reports and summaries prepared on the computer were printed for further reference and study. The numerical data used in preparing the reports and summaries were thus of short-term value only and had little potential for archival purposes. In fact, retaining the data after they had ceased to be of value for computer manipulation could only have increased the volume of data held to such an extent that the mass of detail would have concealed information important for archival purposes.

More recent computer applications, in the form of text-editing terminals, manpower-resource data banks, financial-information systems, photo-typesetting from machine-readable records, and others as complex, have increased the range of computer-assisted services. In addition Ontario Hydro operates a computer-assisted information storage and retrieval system to aid members of senior management. It is here that machine-readable records of long-term value have been created. Most of these more recent applications continue to use the computer to assist in preparing accurate reports published for internal or external use, or both. One must consider how adequate the cards, tapes, or disks are as storage devices for permanently valuable records. In this respect, for these forms there appear to be risks not found in older methods. The risks include both loss of the record through deterioration of the storage medium and changes in equipment design and programming requirements.

The risk through deterioration is illustrated by the case of punched cards. Even under ideal storage conditions, changes to them may result in the inability to reuse some of the information. Magnetic tapes of good quality can be used to store data, but data are subject to risk of inadvertent change from particles of dust on the surface or from the influence of magnetic fields in the storage area. Risks can be reduced by filtering air carefully, reducing the rate of air exchange, and cleaning tapes; but tapes require regular recopying which, according to data processing personnel, should be done within six months of recording the data. All this is part of a rapidly changing field, and the development of better equipment and tape may change the situation. As a storage device, however, magnetic tape involves extra processing costs, although the cost of an individual reel of tape is relatively small.

Changes in equipment design and programming requirements present a somewhat different problem. Although the machine language in which data are recorded can usually be modified to meet new requirements, and programs can be converted to suit newer equipment, both of these involve added costs which must

also be taken into account in any planning. At present, microfilm copy of computer output seems a promising development for storing data in a form that can be automatically reentered into the computer. The current development in the field of optical-character readers seems to suggest possibilities for extending the use of microfilm to storage of machine-readable records. The method is in early stages of development and is still very expensive. If the trend of costs for this form follows that for other equipment, the costs will probably decline in the future, and microfiche may become a practical way to provide records which can be read on microfilm readers, copied using microfilm printers, and read into the computer through the optical-character reading device if there is a need to manipulate the stored data. Microfilm requires less space and, therefore, costs less to store, thus making economically feasible an increase in the quantity of records held. This possibility emphasizes the need for careful selection to avoid accumulating information having little or no archival value and serving only to obscure valuable information.

The use of computer-assisted programs in storage and retrieval of non-numerical data suggests a guide to application of machine-readable records for archival retention. Ontario Hydro applies the computer in this way to the work of the Documentation Centre. This centre was set up to locate important information, organize it, and index it in depth for rapid retrieval later in assisting members of senior management in their administrative duties. The staff of the centre selects information on important decisions, policy innovations, significant occurrences, and the solution of major problems. The information is obtained from a wide range of sources, including official minutes, reports, letters and memoranda, announcements, and reports of outside events.

Organized data are prepared for input to the computer on punched cards, and new information is added to that already stored on magnetic tapes. Each quarter the data for the current and the previous five years are processed to produce the Guide to Current Documentation, the reference tool for locating information. The system is designed so that the information can be set up in future in an "on-line" system using a terminal to display the stored record if required. The tapes are now held in a controlled environment by the staff of the Data Processing Division and processed as scheduled for the Documentation Centre. Like other information systems operated in special areas, such as the Manpower Resources Information System, the machine-readable records are periodically brought up to date.

The Documentation Centre forms a part of the Records Adminis-

tration Department, and members of senior management are asked to ensure that important information is adequately documented by supplying copies of records that they originate to the centre for processing. If records are not supplied which the staff of the centre thinks should be included, they request copies. Through this two-fold approach, the staff seeks to maintain a relatively complete record of important information.

Rules for retention of records in machine-readable form conform generally to those for other records. In both cases the originator decides whether the record is of a permanent or temporary nature. The storage of the two kinds of records, however, does involve some differences in requirements, although the basic rules governing retention apply similarly for both types. It may be helpful to examine briefly the development of the records-management program in Ontario Hydro.

Before Ontario Hydro established a records-management program in 1952, it had a Central Filing Department, which, in theory, served all parts of the organization. Actually, however, many departments had found it necessary to establish their own filing sections. The records-management program was based on formal acceptance of decentralized active files under central control. Hence, every division and every regional office was required to establish its own records centre and to assume full responsibility for filing and storing active records needed in its work. The Records Management Department undertook to supervise the program and to provide central storage facilities for property documents, formal contracts and agreements, inactive records, and microfilm.

Under the program the retention of records is governed by four main considerations: (1) their relationship to making or changing official policy of the organization, (2) their requirement for audit purposes, (3) their requirement in support of legal documents, and (4) the historical value of their contents. In each records centre the originator classifies outgoing correspondence and indicates whether it is to be retained on a permanent or a temporary basis. For incoming mail the recipient checks the classification assigned by clerical staff. Records are held in the various records centres only so long as they are required for active reference. After that time the records centre arranges to destroy them, microfilm them, or transfer them to storage after obtaining authorization to do so from Records Management staff. When records are transferred to central storage, the staff consolidates all permanent correspondence into one general reference collection arranged in accordance with the official filing index. The Central Records staff divides the col-

lection into four historical periods and transfers or retains in archives records containing information of historical interest. Records of no reference value are then destroyed.

Although this program was developed before computers had been generally applied in Ontario Hydro, the general rules for retaining records produced by the computer have been successfully applied for printed data. The principle that the originator should decide upon the term of retention for such records has been applied in relation to machine-language records with data processing personnel regulating the storage of the tapes. As mentioned earlier, computer tapes which are periodically brought up to date are retained. In each instance the current and the two immediately preceding tapes are held as security against loss of the data.

The great danger in permanently storing machine-readable records lies in the risk of saving masses of data that have little or no historical reference value. The situation resembles that which arose in Ontario Hydro in 1956 when a history of its first fifty years was being written. The writer of the history was shown a large number of bins containing record collections of the organization. When he found that there was no subject index to the files, which had not all been edited, he decided against using them and obtained his information in other ways.

Most of the information stored in machine-readable form is statistical material which is processed and summarized by the computer. After it has been processed, this information has little further value. The reports and summaries derived from it are printed, therefore available in that form. The retention of these machine-readable records is expensive and unnecessary on a long-term basis. Information of value for archival reference purposes is that which is communicated between individuals. This information is usually captured in written or printed form. It is necessary to select exceptional items for archival purposes. This kind of information is not normally set up in machine-readable form but may be either stored as written or recorded on microfilm.

There are no plans to store machine-readable records permanently for two reasons. First, the information recorded in this form is not a kind for archival retention, and second, the storage of valuable records in this form is too expensive. This is not to say that machine-readable records will not be used for storage if it becomes feasible to do so.

At Ontario Hydro, plans are to continue employing computer-assisted programs in those information storage and retrieval systems to which the machine-readable records can be usefully applied. In

the Documentation Centre application, magnetic tapes store information to assist management by the rapid retrieval of important information. For staff planning, machine-readable records are used to store the data regarding qualifications and experience of each employee so that it is quickly available when required. In both cases the manipulating characteristics of the computer are used and the records may be transferred to some form of "on-line" storage if this becomes economically feasible in the future.

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