Effective leadership by a central agency could minimize wasteful duplication of effort among the individual agencies. At present, there is no adequate mechanism to prevent repetitive explorations by different agencies into the same or very similar applications which have previously been developed by other agencies. An effective information exchange is needed to help each agency become aware of both the results of completed studies and the nature of current work in progress by other agencies. Many of the same basic problems exist at more than one location.

In our June 1958 report, we commented on the unnecessary expense and duplication of effort involved in multiple development of electronic systems rather than comprehensive development at a single location prior to extension of the system to other locations.

No single operating agency can be expected to plan for Government-wide integration of systems. Comprehensive planning in connection with significant jobs could readily involve the functions of more than one agency, and a central planning group could actively encourage early consideration of automatic interchange of records, development programs, and research data. A central group should be alert to the desirability of reorganizations if better data processing could be arranged through integration of systems.

Central coordination could also provide assistance with regard to the interchange of magnetic tape records between industry and Government. We feel that there is a great undeveloped potential in this area which needs to be more aggressively pursued on a coordinated Government-wide basis. Millions of transactions flow between industry operations and the Federal Government each year. Many of these transactions are initially recorded on magnetic tapes by industry for its own use. Automatic transcription and subsequent automatic processing of these transactions for Government purposes are now possible through the use of these tapes. Only limited interchange of data in this manner has been accomplished to date. Wage records are reported on tapes to the Social Security Administration by a small number of companies. Also, arrangements have been made for exchange of data on magnetic tapes between the Department of Defense and several private firms.

Through elimination of the need for manual transcriptions of detailed records with correspondingly fewer errors and lower transcription costs, potential savings in this area are large enough to warrant full exploration of the possibilities. A joint and coordinated effort in this area can significantly contribute to the development of workable programs with industry and the individual agencies to accomplish this objective.

OPPORTUNITIES OFFERED FOR DEVELOPMENT OF INTEGRATED BUSINESS SYSTEMS

An interesting and important fact is that, for the most part, electronic equipment systems are universal in nature; i.e., computers can be used to perform an almost unlimited variety of work for both scientific and business purposes. For example, electronic computing devices have played an important role in the design and development of advanced missile systems. First, it was necessary to develop electronic computers as information-processing machines to assist in the solution of problems related to development of these new weapons. Other electronic computing devices were developed for use in guidance systems and were installed as integral parts of these weapon systems. In turn, data generated by operation of the weapon system are communicated and analyzed electronically to aid in designing improved weapons. Also, feedback data are used to provide an analysis of what is needed for design of new and improved data-processing equipment.

The foregoing example of feedback of data, its use in review and analysis of results, and related use in the design of improved systems can be significantly related to other Government programs.

For example, in business-type applications, electronic systems can be designed to provide for preparation of analytical reports on data trends and relationships, rates of flow, rates of change, etc., which in turn can be useful in providing improved data-processing systems to assist in the development of more effective management control systems.

Through the use of electronic equipment, opportunities are offered for development of integrated systems which compare and analyze planning factors in relation to actual results of program operations. For example, in business systems, this would involve: