

A research capacity directed to an analytical evaluation of user requirements for the purpose of designing and developing the system components essential to perform these services is the essential capability. The construction of the reference file, the definition of standards in every category and the design of software routines and other system techniques that perform the facilitating services would all be controlled by what could be learned through research and analysis about the systemic elements of user requirements.

Some indication of the direction this analysis will have to take can be gathered from the National Bureau of Standards report in appendix C. A modest effort made to think through the kind of knowledge about user requirements that will be essential to system design and development is described there. In sum, it will be important to identify major classes of users, to learn the extent to which their requirements intersect the same sets of data, to learn the ways in which they require record matching from similar or different sources and the acceptable levels of aggregation. Only a systematic understanding of the joint and disjoint characteristics of the major requirements can serve to design an effective reference index, design relevant standards, and guide system design.

#### RESOURCE REQUIREMENTS

Many of the elements of this kind of program appeared in the Ruggles committee report and in the preliminary review. The task that has occupied recent months has been the attempt to document the needs more fully and develop some notion of preliminary specifications and costs.

The problem was broken into three parts for study and discussion and assistance sought with each. First, the essential ingredients for a reference and referral service were considered. A committee of knowledgeable people was assembled on an informal basis to discuss these issues (identified with the report in app. A). Second, a more intensive study was undertaken based upon the survey of machine-readable records conducted by the Office of Statistical Standards and contained in the appendix of the Ruggles committee report. In this way, an attempt was made to specify more clearly some of the costs of the archival function. The Bureau of Labor Statistics made part of the time of Mr. Mendelssohn available to carry this out (report in app. B). Third, an attempt was made to specify more clearly the essential elements of the system that would provide the facilitating services and what it would take to provide such services. For this purpose the National Bureau of Standards was used as a vehicle to assemble several people with a considerable range of knowledge of both the uses of Federal data and the production processes that generate them (report in app. C). In addition to these organized efforts I have discussed substantive issues with a number of knowledgeable people in the Federal agencies (both statistical agencies and program agencies) and in the universities (including an interview with the professionals involved in Project MAC at MIT).

This effort has yielded a better understanding of the nature of the problem and the system requirements. However, it has been somewhat less successful in specifying in detail the components of the system and the resource requirements. Let me review first the results and then evaluate the shortfall.

#### *The reference function*

In reviewing the requirements for the reference function the committee made a rough judgment that it might take as much as 5 years and an average of \$2 million a year to provide a meaningful reference and referral service for the Federal statistical system. This appraisal is limited in two ways, however. It is not the product of the kind of staff work in program planning that would be essential to a refined estimate and, therefore, represents only an informed speculation. More important, this estimate was generated with a view of the reference function as a discrete service unit or capability. It is recognized that a reference service would be more effective as an integrated part of a total service center program because the reference problem forms only a part of the larger problem set. If the provision for reference services is combined with other user services, the professional staff (particularly in its analytical and system development capacity), the computer facilities and other components of the service system could perform many joint functions. It is believed that because of the joint product character of these services, the incremental costs of providing a reference capability as part of a larger service system would be somewhat less.