

**NBSIR 73-183**

# **USAC Transferability**

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Technical Analysis Division  
Institute for Applied Technology  
National Bureau of Standards  
Washington, D. C. 20234

April 1973

Final Report

Prepared for  
**The Department of Housing and Urban Development**  
**Urban Information Systems Interagency Committee (HUD/USAC)**  
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**U. S. DEPARTMENT OF COMMERCE, Frederick B. Dent, Secretary**

**NATIONAL BUREAU OF STANDARDS, Richard W. Roberts, Director**



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## 1.0 INTRODUCTION

### 1.1 Background of the USAC Program

The USAC program is an effort to sponsor research and development of transferable and operationally based municipal information systems. The effort was initiated in 1968 when the federal Urban Information Systems Inter-Agency Committee (USAC) was established. This body is chaired by the Department of Housing and Urban Development, and includes members from the Department of Health, Education, and Welfare, and the Departments of Commerce, Justice, Labor, and Transportation. The Office of Management and Budget, the Office of Economic Opportunity, the Defense Civil Preparedness Agency and the National Science Foundation are also members of the committee.

Six cities were selected competitively early in 1970 to receive federal assistance in performing **research** and development tasks leading to the development of municipal information systems. Each city is the prime contractor for its project, and heads a consortium consisting of a computer systems firm and a university as subcontractors. The six cities are as follows:

- ° Charlotte, North Carolina is developing a comprehensive municipal information system including all local-area information resources, and serving all municipal departments.
- ° Wichita Falls, Texas is working toward the same comprehensive system as Charlotte.

- ° Dayton, Ohio is developing a system which will cover the public finance sector of municipal government.
- ° Long Beach, California is developing a system which will cover the public safety sector of municipal government.
- ° Reading, Pennsylvania is developing a system which will cover the physical and economic development sector of municipal government.
- ° St. Paul, Minnesota was developing a system which would cover the human resource development sector of municipal government. (This project is no longer active.)

In addition to the six USAC city projects, there are five USAC management support contracts. These are designed to afford consultation, technical evaluation, and other services to the USAC staff. These contractors are Claremont (California) Graduate School (CGS), Long Island University (LIU), The National Bureau of Standards (NBS), National League of Cities (NLC)/International City Management Association (ICMA), and Public Technology, Inc. (PTI).

Most documentation products resulting from all of the efforts described above are available from the National Technical Information Service (NTIS) in Springfield, Virginia.

## 1.2 Objectives of the USAC Program

The primary objective of the USAC program is to create a capability for combining large amounts of data about a city with the most recent level of technological development of computer-based information systems, thus allowing a broad spectrum of users to make better decisions in their respective areas of responsibility. This primary objective encompasses the following specific objectives:



- ° To improve the information and decision-making capabilities of municipalities through the development of operationally-based information systems.
- ° To develop solutions to the problem of transferability, and to generalize these solutions so as to permit, with only minor modification, their application to other municipalities.
- ° To encourage the standardization of data and inventories of data.
- ° To develop solutions to the problems generated by sensitivity of information (i.e., the protection of personal privacy).
- ° To demonstrate the payoff of the broader approach.

### 1.3 Purpose of the Report

The prototype systems are now being implemented in the project cities, and will become operational in incremental stages over the next two years. It is necessary to continue planning the future direction of the program toward its original goal to transfer the results to other municipalities. The purpose of this report is to support the development of such a plan. It provides a broad assessment of the transferability of the USAC developed technology from three perspectives:

- ° The technical results achieved in the prototype systems in terms of the research objectives of the program.
- ° The feasibility of transfer of the products of the program.
- ° The organizations that could participate in the transfer considering the potential applicability of the technology.

Proposals relative to future directions of the USAC program are given in each of the above areas.

#### 1.4 Organization of the Report

The report consists of five sections, including the Introduction.

Section 2.0 is an assessment of the program in terms of its research objectives, in which some emerging problems requiring further study are identified.

In Section 3.0 the technology products of the program are identified together with an assessment of their transferability. Proposals to enhance the transferability potential of certain products are also included.

Section 4.0 contains a discussion of the characteristics required of organizations to participate in the transfer of USAC technology. It concludes with a description of those organizations and their proposed roles which are considered best suited for USAC transfer.

Section 5.0 is a summary of the proposals to enhance the transferability potential of USAC.

## 2.0 AN ASSESSMENT OF THE USAC PROGRAM

### 2.1 Current Status of Prototype Systems

The program to develop and implement three subsystems and two comprehensive systems in five project cities has been progressing since March 1970. A sixth project, to implement a Human Resources Development subsystem, was terminated because of overwhelming problems with the interjurisdictional nature of health delivery, welfare services, etc. A new research approach has been planned for this subsystem.

The concept of the USAC program was that four cities would each develop a prototype system of one of the major functional subsystems of a municipality; i.e., public safety, physical and economic development, public finance, and human resources development. The remaining two cities would develop comprehensive prototype systems encompassing all four subsystems. Thus each subsystem would be implemented in three cities for comparison of results. The work for each project is structured into nine USAC defined tasks which are intended to maintain the research perspective of the program (para.2.2). These tasks are:

- Task 1 - Analysis of the current city operations, decision processes and information requirements.
- Task 2 - Systems conceptualization (preliminary design).
- Task 3 - Detailed systems design including the implementation plan.

Task 4 - Systems development (programming).

Task 5 - Systems implementation and testing.

Task 6 - Technical evaluation of systems design and operation.

Task 7 - Orientation and Training.

Task 8 - Organization and Administration.

Task 9 - Monitoring and Impact Evaluation.

All of the project cities have completed Task 1. Task 2 has been completed in three cities, and is almost completed in the remaining two. All of the cities have started Task 3, with four of them into Tasks 4 and 5. The remaining tasks apply throughout the project duration.

The prototype systems in the three subsystem cities will be in substantial operation by early 1974; the two comprehensive cities by mid-1975. These systems will, at this time, demonstrate the technology in actual operation. They could, in addition (although not planned at this time), serve as test sites for measuring the degree of achievement of the research objectives of the USAC program. The research objectives are discussed in paragraph 2.2, and the current status of the city projects relative to these objectives is assessed in paragraph 2.3.

## 2.2 The Research Objectives of the Program

The USAC Program is characterized by a substantial program of research into the fundamental problems of urban information systems and municipal government. A basic premise

of the program was that previous efforts did not adequately address these fundamental problems. The USAC research program was directed to the investigation of the following:

- The decisions and information requirements related to the delivery of services in a municipality.  
This required a basic and comprehensive analysis of municipal operations, their inter-organizational relationships, and the decision processes required for effective government.
- The problems in protecting the privacy of citizens and providing information required to govern.  
The privacy of citizens was to be protected procedurally and administratively within the government by incorporating administrative and technical controls over the processing of data within the computer system.
- The impact of information systems on the organizational behavior of the government and upon its citizens.  
The impact of the system on the governmental organization, and the impact of the use of the system on the delivery of services to the citizenry were to be thoroughly analyzed and documented.
- The technical problem of efficient system design in relation to the problems of data acquisition, data management, and data use.  
The resulting computer system design was to incorporate the concepts of an integrated data base and generalized data processing based on the information needs of the entire governmental structure.
- The technical problems in system design that bear on the transferability of the results.  
The transferability of the systems was to be enhanced by computer program modularity, generality, and machine independence, and by the use of conventional hardware and system level software configurations.
- The possibility to standardize data format and meaning for intergovernmental information flow.  
The design approach was to incorporate the requirements for data flow between governmental jurisdictions both horizontally and vertically. Data standardization objectives were also enunciated at the outset of the program.

- ° The demonstration of the costs and benefits of USAC's broader approach.

The costs and benefits in operating an integrated management system were to be analyzed and documented. The prototype systems in the project cities were to demonstrate, through actual performance, a favorable cost-benefit ratio.

The transferability of the USAC results will be dependent, in large measure, upon the degree of achievement of the research objectives and the adequacy of system documentation. In the next paragraphs the current status of the city projects relative to the above areas of research is described, and additional study efforts required to enhance the potential for USAC transferability are suggested.

## 2.3 Emerging Problems Relative to the Research Objectives

### 2.3.1 Decision-Making and Information Requirements

The information requirements for municipal operations and decision-making were analyzed by the project cities during the systems analysis and conceptualization phases (Tasks 1 and 2). The result of these two phases is the basis for the design of the system. Two problems are now apparent that should be given further study.

- ° A uniform hierarchical functional structure (apart from the organizational structure) of a city's operations was postulated by USAC in RFP H-2-70. It was determined by the project cities, however, that such a uniform structure is not feasible. Significant differences were noted between the analyses of the same major functional systems in different cities. An understanding of the functional structure of each city's system is necessary in determining those elements of the prototype system which may be considered transferable entities. USAC postulated that the component

level, in the system-function-component-application hierarchy, would be most acceptable for transfer. This postulate may or may not hold up after an attempt is made to transfer USAC products. However, from the standpoint of USAC transferability it seems important to rationalize the prototype systems departure from the postulated USAC functional structure. The differences between cities and their functional structures probably reflect varying responsibilities, charters, ordinances, priorities, etc., that would be of importance to potential transferees. It would be useful for USAC to be able to identify these differences and to understand the effect that each has on the transfer process.

- ° The initial implementations of the prototype systems will largely dwell on the routine operational type decisions in which tasks, goals, and resources are well-defined. The more sophisticated and complex decision-making related to management control, programs, and planning will evolve with time. Other municipalities which will weigh the benefits of the USAC approach, will soon be aware of the limitations of the decision-making capabilities of the USAC systems. Independent analysis and evaluation of these results should be carried out as the prototype systems become operational, and should continue until some improved decision-making result can be observed.

### 2.3.2 Privacy Problems

The USAC program has, from the beginning, emphasized the problems of citizen's privacy and data confidentiality that must be addressed in the city prototype systems. All of the project cities have addressed the problem of privacy through the establishment of policies and administrative procedures. There is still, however, much substantive work to be accomplished in defining the specific issues that must be faced by a municipality. This will come only with experience in actually carrying out the policy and procedures.

The technical problems of controlling and maintaining the confidentiality of the data in a data processing system are being addressed by the project cities during the current system design phase. The cities are employing various techniques to control access to the data. The subject of access control in computer systems is receiving considerable attention in the industry today with a variety of techniques being offered, suggested, or developed. Better solutions to the problem of access control on a cost-effective basis will probably be developed in the near future.

The technical solutions to control and maintain data confidentiality implemented in the prototype systems should be evaluated in relation to these newer developments in the state-of-the-art now emerging.

### 2.3.3 Impact of Prototype Systems

The project city contracts require the contractor consortium to monitor and evaluate the impact of the system on the municipal government and the community which it serves. Impacts on the government are expected in the areas of organizational structure and effectiveness in performing functions and responsibilities. Impacts on the community are expected in the area of service delivery and in the citizens' perception of the city management. These impacts are expected to be evaluated by the municipal consortia and documented in the final phase of the contract period. While the development of study approaches and methodology for impact analysis



is receiving considerable attention, the level of effort planned for these studies, and the time available within the contract periods to conduct them, will severely limit their value.

The full impact of the system will most likely occur after it has been in operation for a substantial period of time. The impact, therefore, will not be fully documented as the program plan now stands. The impact evaluation should be carried out beyond the terms of the current contract periods, and should probably coincide with the implementation of a transfer program where such evaluation would be most beneficial.

#### 2.3.4 Systems Designs

The basic design features of the prototype systems are now apparent. Each represents a substantial upgrading of the data processing capability of that city. There is a wide range of sophistication and complexity among the five cities' systems:

- ° One system will be primarily batch processing with discrete applications oriented computer processes and data files.
- ° One will be exclusively batch processing with a newly designed data management technique oriented to an integrated data base.
- ° One will use a vendor supplied telecommunications system augmented by newly designed data management software oriented to an integrated data base for on-line transaction and batch processing.
- ° Two systems will utilize sophisticated vendor supplied data management systems for on-line transaction and batch processing.

The documentation required by Tasks 3, 4, and 5 will provide a complete and detailed description of the system (including the program listings) to facilitate the transfer of the systems (or parts thereof) to other cities. There is little likelihood, however, that the technical quality of the systems designs will be evaluated adequately for transfer purposes within the scope of the current projects. Task 6, while directed to technical evaluation, has been primarily concerned with evaluating documentation. Furthermore, the level of effort for Task 6 is not adequate for the type of evaluation that is needed.

Each prototype system will represent a different technical approach to the design of its integrated data base structure and data management software, both related to a specific hardware configuration. The prototype systems should be evaluated in the following technical areas:

- ° The data base structure and its rationale in terms of the functional performance requirements of the city.
- ° The technical capabilities of the data management software and its specific implementation relative to the data base structure.
- ° The data processing performance in terms of response and efficiency under actual use.

#### 2.3.5 Data Standardization

The original plan of USAC, contained in the city contracts, was to develop lists of standard data elements and codes for all of the city projects. These lists were to

be classified into mandatory, recommended, and optional standards for all projects. The standard lists were not developed by USAC. As a result each city project has developed its own dictionary of data elements and codes for implementation in its prototype system. The NBS is currently analyzing these dictionaries to determine the possibility for future development of standards for municipalities, and the relationships of municipal data to federal requirements.

#### 2.3.6 Cost/Benefit Analysis

A basic premise of the USAC program was that the prototype system projects would "demonstrate the payoff of the broader approach." The city projects were required to analyze the costs of collecting and processing data elements or sets of data in relation to the benefits to be obtained in the use of the data. The city projects are approaching this requirement on a token basis. There is little expectation that a convincing cost/benefit analysis on a system-wide basis will be produced for the prototype systems.

A credible cost/benefit analysis of the prototype systems could be an essential input to those in other cities who must assess the economic viability of the system in their environment. The operating costs of the prototype systems will be known for the project cities. Some of the more easily identified benefits such as manpower savings, cost-avoidance, etc. have been, or will be identified by the city projects. Less tangible benefits such as improved services, better

management decisions, may not be easily assessed. It is, however, necessary to identify and measure (or otherwise assess) the costs and benefits of each system, on a system-wide basis, and to document the results for visibility.

### 3.0 THE TRANSFER POTENTIAL OF USAC TECHNOLOGY

#### 3.1 The Technology Products

##### 3.1.1 Systems Level Products

The most visible products of the USAC Program will be the documentation of the prototype systems as provided for by the contract tasks. Systems documentation will exist at two levels, i.e., system conceptual design, and implemented system design.

The conceptual design could be used by another municipality in the design of its own computer-based function-oriented system. The system design of a prototype system could be implemented in another municipality in toto, or with modifications.

The systems level products will also represent different levels of integration of the hierarchy of municipal functions, and different approaches to integration at the same hierarchical level. The two comprehensive prototype systems (covering all four subsystems) will represent the highest level of integration, each containing different approaches to integration (not precisely known at this state of development). The three subsystems will represent integration at the subsystem level of functions, each containing approaches to integration different from the two comprehensive systems (also not precisely known at this time).

### 3.1.2 Concepts and Techniques

Concepts and techniques related to integrated municipal information systems will be documented separately in some cases, or otherwise included within the systems level documentation. They comprise a body of technology based on the application of management science and computer systems science to government operations. The major elements of the technology that can be considered transferable within these classifications include:

- ° Management Science
  - Decision models in the management of government operations and planning.
  - Information requirements and availability for planning and decision-making.
  - Inter-organizational functional relationships in municipal government.
  - Rationalization of inter-organizational information flow.
  - Rights to privacy vs. the government's need for information.
  - Inter-governmental information flow.
  - Impact of information systems on organizational structure and behavior.
  - Use of geographic information in urban management.
- ° Computer Systems Science
  - Integrated data base structures for the urban environment.
  - Data management systems.
  - Geocoding techniques.
  - On-line processing in urban systems.

- Data security techniques.
- Transferability aspects of software design.
- Data element dictionaries for urban systems.

### 3.2 Transferability of System Level Products

#### 3.2.1 Comprehensive Systems

The two comprehensive prototype systems represent the lowest potential for transfer to other municipalities for the following reasons. Most, if not all, of the cities within the population range for which these systems would be economically viable, are already committed to their own data processing systems. Transfer of one of these prototypes would require that the transferee commit itself to the prototype computer hardware configuration, its software system, and user procedures. The possibility of this type of commitment must be considered quite low.

Even though the transfer of total comprehensive systems do not afford the best opportunity for payoff, their existence as demonstration projects do provide some benefits within the overall scheme of the USAC transfer objectives:

- ° They provide experience and guidance in the integration of information flow across the entire range of municipal functions.
- ° They represent the only current USAC experience in the integration of Human Resource Development (HRD) functions within a municipality.
- ° Their operational experience will provide some basis for estimating the system performance characteristics and workload data for a comprehensive system.

- ° They will also provide an experience base for evaluating the economic viability of a comprehensive system.

### 3.2.2 Subsystems

The transfer of complete subsystems could afford the largest payoff in the achievement of USAC transferability objectives. Subsystems are comprised of groups of function-oriented organizations that, when working in concert, accomplish the principal missions of the municipal government. Public Finance (PF) is part of the process to keep the government solvent. Human Resources Development (HRD) deals with the human potential of the population. Physical and Economic Development (PED) deals with the physical resources and economy of the community. Public Safety (PS) serves to protect against threats to life and property. These mission-oriented groupings of functions are widely accepted in municipal governments. The prototype subsystems serve to integrate the functions and activities of the principal vertical organizations of the municipal government toward common missions. The USAC approach, therefore, should find acceptance and appeal in other municipalities for subsystem transfer. The Public Finance (PF) subsystem appears to offer the greatest potential for initiating a USAC transfer program. There is evidence, now apparent from the USAC experience, that PF can be considered the logical beginning for developing an integrated comprehensive system on an incremental basis. PF functions penetrate the entire organizational structure of a city. The USAC



integrated approach to PF (particularly the planning, programming and budgeting concepts) introduces performance budgeting and monitoring to municipal management and decision-making. This provides the logical starting point for the incremental adding of the remaining subsystems that are primarily concerned with service delivery. The transferability of the PF subsystem could be enhanced by designing initial transfer projects that would demonstrate its adaptability to different types of jurisdictional responsibilities, and ranges of data processing sophistication.

### 3.2.3 Functions and Components

The subsystems are comprised of functions (e.g. the police function of PS), and components (e.g. law enforcement). Functions and components are the most transferable of the system level products. A large number of municipalities can incorporate them into their own data processing systems with few technical problems. They can be more readily adapted to user requirements than complete subsystems. In addition, the benefits are more easily understood. While their transferability potential is very high, the objectives of the USAC program are marginally served because the concept of an integrated system is easily lost at this level.

### 3.3 Transferability of Concepts and Techniques

The concepts and techniques developed from the USAC program are applicable to all types of governmental organizations concerned with information systems. While the system level

products are primarily oriented to municipal governments of a given population range, the concepts and techniques are applicable to all general and special purpose governments. These include not only state and local municipal governments of any size, but also county governments, regional governments, townships, special planning districts, multi-county planning areas, state-wide planning areas, etc. The development of information systems in these organizations is initiated, in some cases, through local initiative using local resources. The federal government has, in recent years, expanded its financial support for information systems within these organizations in support of federal assistance programs. The transfer of USAC developed concepts and techniques can be best exploited by addressing both of these situations. In the case of local initiatives it will be necessary to determine how to disseminate the technical information and to provide technical assistance where necessary. In the case of federal assistance programs, it will be necessary to determine the appropriate means for applying USAC concepts and techniques to federally sponsored information systems projects at state and local levels of government. In either case, the USAC concepts and techniques need to be identified, classified and documented for transferability. The major elements of the technology identified in paragraph 3.1.2 could serve as a point of departure in developing a system of cataloging the concepts and techniques. The USAC documentation could then

be searched to identify and further describe and redocument as necessary the potential elements of the technology. The classification scheme would aid in the dissemination of the material.

## 4.0 POTENTIAL TRANSFER ORGANIZATIONS

### 4.1 The Elements of A USAC Transfer Program

In the preceding section, the transferable products of the USAC program were identified. In this section, the federal, state and local level organizations that could participate in the transfer are identified. The identification of such organizations must be based on an overall strategy of a USAC transfer program, the elements of which could encompass the following:

- ° Federal assistance projects for general purpose type governments in the transfer of prototype systems level products.
- ° The application of USAC concepts and techniques in the development of federally sponsored information systems related to federal program requirements.
- ° The application of USAC technology in national standardization programs.
- ° Technical assistance programs for state and local governments acting on their own initiatives.

### 4.2 Relationship to Current Efforts in Intergovernmental Cooperation

The elements of the transfer strategy, indicated in the previous paragraph, imply a cooperative effort among federal, state, and local agencies in the development of information systems. In identifying the most appropriate organizations to participate in the transfer of USAC technology, therefore, it is necessary to examine the current status of intergovernmental cooperative efforts. This is done in the succeeding

paragraphs. The existing structure of federal and state level organizations are examined first. In the succeeding paragraph, new organizations proposed in special studies to improve intergovernmental information flow, and for the transfer of technology, are examined. In the final paragraph, the existing and proposed organizations are examined for their potential role in USAC transfer.

#### 4.3 Existing Structure for Intergovernmental Cooperation

The existing structure for intergovernmental cooperation is diagramed in Figure 1. It includes federal assistance programs, information systems development programs, science and technology programs, and programs under the various public interest groups. Each of these is discussed below.

##### 4.3.1 Federal Assistance Programs

Federal assistance programs are handled through grant or contractual arrangements. Formalized coordinating procedures for the formulation, evaluation, and review of such programs have been established at all levels of government. Additionally, the Federal government encourages states to establish systems of planning districts which are consistent with Federal program planning areas. This would afford the greatest potential for the coordination of Federal assistance programs with state and local plans and programs; however, up to this time such alignment has been achieved in only five areas. These areas and a detailed analysis of the alignment of Federal programs is given in Appendix A. The information

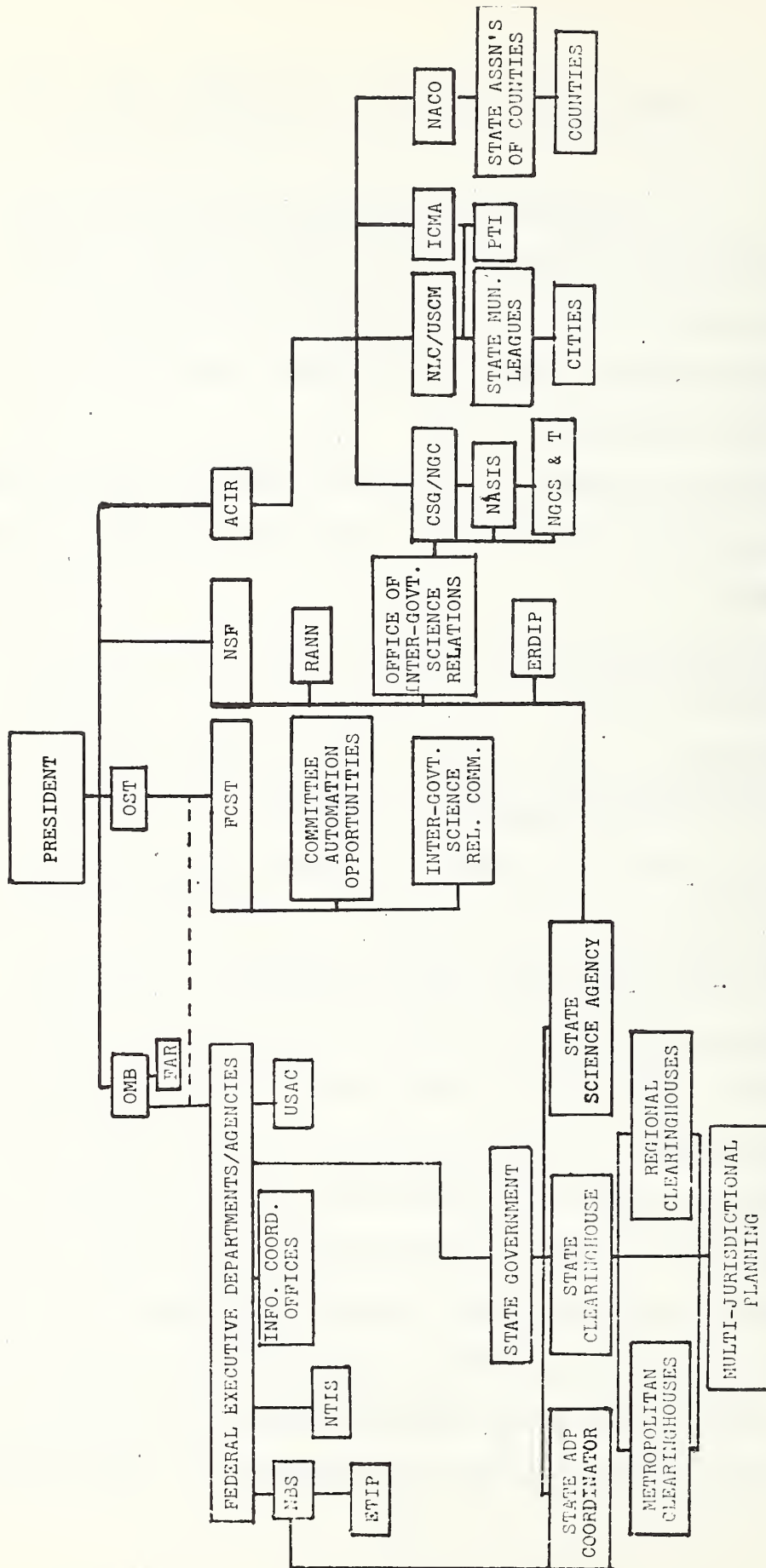


FIGURE 1. EXISTING ORGANIZATIONS FOR INTERGOVERNMENTAL COOPERATION

NOTE: See Appendix D for Acronyms.

contained therein is based on an analysis of data developed by a DOC review of the problem [7]. All of these Federal initiatives have resulted in the definition of roles and the establishment of administrative structures at all levels of government.

The statutory basis for such federal actions includes the Demonstration Cities and Metropolitan Act of 1966, which authorizes federal assistance for public facilities and services in metropolitan areas, and the Intergovernmental Cooperation Act of 1968, which extends the coordination of federal assistance programs to include the complete system of state, regional, and local planning. This latter act also authorizes Federal agencies to provide special and technical services to state and local government.

The Federal organizations which are responsible for the coordination of Federal assistance programs are:

- ° The OMB, which has as its basic role the establishment and maintenance of the rules and procedures required to implement the Intergovernmental Cooperation Act (contained in OMB Circular A-97). Also, it has the roles of monitoring Federal agencies in their coordination of Federal regulations affecting state and local governments (described in OMB Circular A-95, which encourages the states to establish a network of clearinghouses for the

coordination of federal assistance projects prior to formal application), and of maintaining and publishing a catalog of federal assistance programs for communication to state and local governments (described in OMB Circular A-89).

- ° The Office of Intergovernmental Relations (OIR), which identifies and reports on problems in intergovernmental relationships caused by federal assistance programs and their administration.
- ° The Advisory Commission on Intergovernmental Relations (ACIR) which represents the executive and legislative branches of federal, state, and local government in matters concerning intergovernmental cooperation. OMB Circular A-85 defines its functions in obtaining state and local government views on proposed federal regulations affecting intergovernmental cooperation.
- ° The USAC program is supervised and monitored by a federal interagency committee. The federal agencies are concerned with the improvement in the management of services at the local level, and in the data that can be generated and used in program planning at state and federal levels.

#### 4.3.2 Information Systems Coordination

OMB Circular A-90 encourages federal agencies to



assist state and local governments in developing and operating information systems consistent with the objectives of their assistance programs. It also provides guidance and procedures for coordinating agency programs, consulting with state and local governments, and cooperating in intergovernmental ventures. Referring to Figure 1, the following organizations are involved:

° Federal Agencies

In reviewing proposed projects, federal agencies are required to ensure that proposed systems are consistent with other state and local government systems or plans. In addition, applications are to be reviewed in the context of other similar types of proposals in order to take advantage of other experience, promote compatibility among systems and avoid duplication of effort.

° Information Coordinating Offices

Each federal agency is required to designate a single office, registered with OMB, to act as the coordinating point for proposals involving more than one agency, or more than one operating entity within the agency.

° ACIR

This agency functions to obtain state and local views on proposed information system projects.

4.3.3 ADP Standards Coordination

The Brooks Bill (P.L. 89-306), enacted in 1965, provides for the efficient and economic acquisition and use of automatic data processing equipment by Federal departments and agencies. The major responsibilities, under this Bill, are assigned to the Office of Management and Budget (OMB), the General Services Administration (GSA), and the Department of Commerce (DOC). OMB is responsible for fiscal control and

policy guidance. GSA is responsible for equipment procurement. DOC is authorized to:

- ° Provide scientific and technological advisory services.
- ° Make recommendations on the establishment of Federal standards.
- ° Conduct research in computer science and technology.

The DOC responsibilities have been delegated to the Institute for Computer Sciences and Technology within the National Bureau of Standards (NBS). The Institute is also responsible for monitoring and coordinating the development of information processing standards (except for standard data elements and codes). This responsibility includes the development of voluntary commercial standards, and uniform Federal standards related to computer equipment, techniques and software. OMB provides the leadership in the development of standard data elements and codes for information interchange by:

- ° Arranging for federal departments and agencies to develop specific categories of standards.
- ° Arranging for liaison with industry, and state and local governments on standards of mutual interest.

OMB policy guidance requires the NBS to give proper consideration to state and local government needs and views in developing standards. This is accomplished through contact with designated ADP coordinators in the 50 states. Standards, before they are approved as federal standards, are sent to the

State ADP Coordinators for comment which must be made within 60 days.

#### 4.3.4 Public Technology Transfer

Current activity at the federal level in developing a public technology transfer program can be summarized as follows:

- ° The Office of Science and Technology (OST) and the Office of Intergovernmental Relations (OIR) are exercising the lead role in defining the proper mechanisms at federal, state and local levels.
- ° OST is supported by the inter-agency Federal Council on Science and Technology (FCST) in defining the federal **role**.
- ° OIR has available the offices of the Advisory Council on Intergovernmental Relations (ACIR) to seek and coordinate the input of the public interest groups.
- ° FCST has two committees working on science and technology transfer. One committee is studying automation opportunities related to domestic needs. The Intergovernmental Science Relations Committee is studying the problem of technology transfer mechanisms. NSF established an Office of Intergovernmental Science Relations to explore ways to improve the application of science and technology to problems of state and local governments.
- ° NSF has also been sponsoring research related to domestic problems within its RANN program (Research Applied to National Needs).
- ° Two special programs have been established which were defined in the President's message on science and technology. The Experimental Technology Incentive Program (ETIP) has been established in the National Bureau of Standards (NBS) to investigate new incentives and mechanisms to bring private technology to bear on national problems. An Experimental Research and Development Incentives Program (ERDIP) has been

established in the National Science Foundation (NSF) to study barriers to technological innovation and alternative Federal policies to reduce or eliminate barriers.

#### 4.3.5 The Role of Public Interest Groups

The term "public interest groups" refers to those associations oriented toward the governmental process, e.g., legislation, public policy, public management, professional standards, technical procedures, and the interaction between governments.

The principal public interest groups, shown in Figure 1, that represent state and local governments on a national basis are referred to as the "Big Six." They include the Council of State Governments (CSG), National Governors Conference (NGC), National League of Cities (NLC), U.S. Conference of Mayors (USCM), International City Management Association (ICMA), and the National Association of Counties (NACO). They constitute a powerful network of organizations for achieving the cooperation and coordination of the state and local governments on matters of mutual intergovernmental interest. These groups are regularly called upon by the ACIR to obtain the coordinated views of state and local governments, as provided for in OMB Circular A-85.

The CSG is a joint agency of the executive, legislative, and judicial branches of all state governments. It provides staff service for NGC, and also for the National Legislative Conference and other affiliated or cooperative

national associations such as the National Association of State Information Systems (NASIS).

One of the most recent programs of the CSG was initiated through a federal grant authorized by the Intergovernmental Personnel Act. In this program, the CSG established an Interstate Consulting Clearinghouse to provide for states to assist one another in solving problems. The CSG is also cooperating with the federal government in the exploration and development of means for transferring public technology to meet the needs of the state and local governments. (Para. 4.4.2)

NLC, ICMA, USCM, and NACO, because of their national level representation of local governments, have been able to establish national programs of assistance to local governments in support of, and funded from, federal grant programs. The programs have, for the most part, been educational in nature, seeking to keep local governments abreast of information systems technology and its application to urban management. NLC, ICMA and USCM, for example, publish the Urban Information Systems Report which provides a periodic review of the USAC program and general dissertations on various technical aspects of computer systems. NLC also sponsors regional seminars throughout the U.S. in which local government representatives can exchange experience and knowledge in urban information systems. ICMA publishes monthly Urban Data Service Reports on municipal activities based on data gathered through surveys

of local governments.

PTI represents a more substantive effort on the part of the public interest groups to bring new technology to bear on the problems of urban government. PTI is the outgrowth of a two-year development effort by ICMA. It is a non-profit cooperation, sponsored by the Big Six, and created to transfer available technology to solve local government problems. PTI participates in the following technology transfer phases: identification of local government problems, development of user design requirements, on-site testing, and training. Its staff is comprised of technical and urban oriented personnel. A Local and State Government Research Council serves as the organization for selecting and defining the urban problems for its research and development program. Currently, its R&D program is comprised of seven problem oriented technology areas: solid waste management, law enforcement, fire protection, housing and construction, streets and highways, management science, and municipal information systems. PTI is still a growing organization, having been incorporated since December 1971. Its initial activity has been assisted by NASA as a logical extension of the NASA technology transfer program. It has also been studying the feasibility of establishing a technology clearinghouse for state and local governments under a NSF grant.

By virtue of their constituencies and their charters, the public interest groups comprise a comprehensive

network of intergovernmental communication. They provide the channels for conducting professional, managerial, and technical education for the conveyance of research results, and for communication of information on governmental programs, policies, issues, positions, etc. These relationships have afforded the public interest groups the opportunity to play a significant role in the expanding programs of public technology transfer.

#### 4.4 Proposed Structure for Intergovernmental Cooperation

Several studies have been undertaken to explore problems related to intergovernmental cooperation. Those pertaining to the various aspects of transferability are discussed below. Proposed organizations which would be set up as a result of these studies are shown in Figure 2.

INTERGOVERNMENTAL INFORMATION FLOW

PUBLIC TECHNOLOGY TRANSFER

State-Local Information Advisory Council.  
Intergovernmental Systems Teams.  
Intergovernmental Information Systems Exchange.  
National Association Technical Assistance Programs.  
Inter-Agency Socio-Economic Data Study Project.

FEDERAL LEVEL

Federal Agency Task Force.  
Scientific and Technical Manpower Clearinghouse.  
National Science Foundation (NSF) Task Force.  
Federal Research Center Technical Assistance.  
Council of State Governments (CSG) User Panels.  
Technology Clearinghouse Under CSG and NSF.  
Office of Science and Technology (OST) Committee.  
Public Technology Inc. (PTI) Joint Venture Program.

Information Coordinating Offices.

Strengthen Role of State Science Advisors.

State and Regional Association Technical Assistance Programs.

State Public Technology Centers.

STATE LEVEL

Information Coordinating Offices.

LOCAL LEVEL

FIGURE 2. SUMMARY OF PROPOSED ORGANIZATIONS



#### 4.4.1 Intergovernmental Information Flow

The problems related to intergovernmental information flow were largely created by the rapidly increasing number and types of federal assistance programs in recent years. This situation was studied in 1968 by an intergovernmental task force. [1] It determined that the essential ingredients for facilitating information flow are:

- ° Responsive information systems.
- ° Technical compatibility of information systems.

This task force recommended that:

- ° Information coordinating offices be established in all states and in those localities where size and complexity warrant it.
- ° Information coordinating offices be established in each federal department and agency.
- ° Local governments be encouraged to cooperate with each other and share system development costs.
- ° National associations, and comparable state and regional associations, should develop appropriate programs of technical assistance.
- ° Intergovernmental systems teams be established with representation from each level of government.
- ° A state-local information advisory council be established to respond to the above mentioned systems teams.
- ° A project should be established to determine a basic set of socio-economic data that would satisfy the federal agency program requirements.
- ° State and local governments should adopt and use standard data elements and codes.

The problems identified in this study concerning

intergovernmental cooperation in information systems developments are directly pertinent to USAC transferability. A more detailed discussion of the results of this study is contained in Appendix B.

#### 4.4.2 Public Technology Transfer

The term "public technology", which has come into common use in recent years, has been defined as "technology which is explicitly responsive to the policy goals and operational requirements of civil governments..." [3]. The USAC program exemplifies this public technology, since it constitutes a concerted effort to apply the sciences of management and computer systems to the needs of government.

The Federal government view of technology transfer, as expressed in the President's message to Congress on science and technology [4], is defined as:

- ° Stimulating and encouraging the private sector to undertake R&D.
- ° Supporting the private sector when appropriate R&D is inhibited by size and risk factors.
- ° Orienting Federal R&D programs to focus on public needs.
- ° Massing R&D resources to satisfy public needs through federal, state, and local intergovernmental cooperation.

This last role is, in essence, the public technology transfer process. The basic functions of such a cooperative effort are to open communication channels, provide access to the resources of federal R&D centers, and aggregate

state and local markets. The President's message also identified the President's science advisor (head of the Office of Science and Technology (OST)) and the OIR as the focal points for discussions to determine ways to improve intergovernmental cooperation in science and technology transfer.

An FCST study [3] attempted to view the entire problem of public technology transfer. The recommendations of the report include the following:

- ° Undertake a comprehensive survey to determine the priority needs of state and local governments. Identify the technology programs and projects which might be applied to those needs.
- ° Conduct periodic reviews of federal R&D activity in consultation with state and local governments to determine the need for changing direction or testing prototypes.
- ° Maintain a scientific and technical manpower clearinghouse for state and local governments. Assist states in position classification and pay structures for scientific and technical personnel. Provide for intergovernmental exchange of personnel.
- ° Provide federal funds for technology projects. Create new arrangements between academic institutions and state and local governments. Make federal laboratories available to state and local governments. Establish a federal data bank on science and technology projects.

The federal initiative to seek ways to improve intergovernmental cooperation has not stopped with this report, however. The OIR, conforming to the President's message, has initiated plans for working with the major public interest groups.

The state view of technology transfer is discussed

in separate studies by the CSG [5] and the NGS and T [6].

Reference 5 presents what may be accepted as a consensus of the states' view:

- ° Organize a user group representing the state and local governments to identify the priority needs and problems.
- ° Organize a supplier group comprised of federal agency and industry technologists to design the technology to fit the need.

The recommendations contained in reference 5 bear on the same four elements of the problem which were identified by the FCST [3]. Reference 6 fully endorses the findings and recommendations of reference 5. It contains, in addition, more substantive proposals to establish NSF programs to support each state in carrying out tasks in public technology transfer.

Three specific programs are recommended:

- ° A state technology management program with a state science advisor and advisory group to plan science policy, anticipate problems and opportunities, and advise the state government.
- ° A technology transfer program based on each state's needs.
- ° An intergovernmental applied science program to assist states in developing their own capabilities to generate new technologies to fit their own needs.

Initial local government views on the public technology transfer problem were made to the President's Science Advisor by Public Technology, Inc. (representing the R&D arm of the major public interest groups):

- ° Create a committee to coordinate city, county, state, and federal technology application programs.

- Support a joint federal, state, and local effort to determine technology applications and evaluate the results of prototype or demonstration projects.

More official positions on the local government views are contained in the policy statements of NLC and USCM:

- Create an urban research unit under the President to serve as a focal point for federal R&D activity related to urban needs.
- Establish a public technology clearinghouse.
- Establish a joint federal-local program to support research on urban problems.
- Adopt standard nomenclature and common statistical reporting procedures.
- Federally fund an R&D grant-in-aid program to enable state and local governments to engage in joint ventures with and through PTI and private industry.

#### 4.5 Consideration of the Alternatives

##### 4.5.1 Required Characteristics of Transfer Organizations

The nature of the transferable USAC technology, and the possible strategies for its transfer, imply certain characteristics required of organizations to participate in the transfer process. These characteristics are defined as follows:

- Coordination of Information Systems Developments  
Organizationally positioned to exercise a coordinating role in the technical aspects of information systems developments at the federal level among federal agencies, at the state level among state-agencies, and at the local level among municipal or regional combinations of government.
- Coordination of Information Requirements  
Possesses the organizational and technical capability to coordinate the characteristics of data collected and used at state and local levels,

with the requirements of federal agencies.

° Technical Information Exchanges

Technical capabilities to evaluate and assess information systems technology and its applicability to federal, state and local requirements; and organizationally capable of disseminating such information where it is applicable.

° Technical Assistance

Organizationally and technically capable of developing and implementing programs of technical assistance to state and local levels of government.

° Standardization

Organizationally and technically capable of representing state and local views in standardization activities.

In the following paragraphs, these required characteristics are used as the basis for determining the most appropriate organizations to participate in USAC transfer from the organizations described in paragraphs 4.3 and 4.4.

4.5.2 Coordinating Information System Developments

The coordination of information systems that are part of federal assistance programs is provided for by the OMB Circulars A-95 and A-90 procedures. The coordinating organizations for these procedures, as depicted in Figure 1, include:

- ° The information coordinating offices within each federal agency as required by Circular A-90.
- ° The state and sub-state clearinghouses.
- ° The multi-jurisdictional planning areas.

These organizations can be effective in coordinating systems within a single federal program area of an agency, especially

in those states where the federal and state planning areas coincide. They cannot be effective in ensuring that proposed systems exploit the best systems or technology that are available or under development (viz., USAC technology). In most cases the states' clearinghouses are administrative liaison groups. Even where the clearinghouse is also a state designated planning area, it is highly unlikely that proposed systems are examined in technical depth to ensure quality and compatibility of systems. The proposals to establish Information Coordinating Offices at federal, state and local levels (See Figure 2) were directed to this objective. The federal agency information coordinating offices established under OMB Circular A-90 serve this objective, however, there is no procedure or mechanism for coordinating among federal agencies.

A viable organization to accomplish coordination among federal agencies is in USAC, which is already operating as an inter-agency coordinating committee for the USAC program. This committee, supported by its technical advisory board, could function to inject USAC technology into the federal assistance programs through an extension of its charter. While this change would provide a substantial degree of coordination with respect to federal assistance programs (including USAC prototype systems transfer programs), it does not move the technical coordination process down to state and local levels.

The functions of the proposed Information Coordinating Offices at state and local levels would extend beyond

the coordination of federal assistance projects. They would operate to improve the technical quality and compatibility of information systems within their sphere of influence, which is appropriate to USAC technology transfer. The establishment of such offices within states has been encouraged through the federal law enforcement assistance programs, in recognition of the need for compatible systems. It would seem appropriate for the USAC program to recognize a similar need, and to determine ways to encourage state and local level actions.

#### 4.5.3 Coordinating Information Requirements

The existing responsibility for coordinating federal information requirements with state and local governments resides in the agency information coordinating offices established under Circular A-90. Agencies are encouraged to obtain advice and assistance from the public interest groups, or alternatively to utilize the more formal mechanisms and procedures of the Advisory Commission on Intergovernmental Relations (ACIR).

The intent of these procedures is to coordinate data requirements among the federal agencies involving functional programs such as economic development, agriculture, education, welfare, etc. Coordination is supposed to be achieved by consultation between agencies, or by the establishment of intergovernmental study teams. For the most part, adequate inter-agency coordination does not appear to take place. Also, the public interest groups apparently have no effective means



for determining the consensus of state and local governments regarding specific data requirements. The Intergovernmental Task Force Study devoted considerable attention to this problem. They proposed establishment of the federal agency information coordinating offices and the use of intergovernmental systems teams, which were provided for under OMB Circular A-90. They also proposed establishing a state-local advisory council comprised of the public interest groups to represent state and local government views. While this was also provided for by Circular A-90, it has not been effective, as already noted. The task force study also proposed establishment of a one-time inter-agency study project to determine a basic set of socio-economic data for federal program requirements. This has not been done, and consequently the entire subject of coordinated information requirements has seen little progress. Since the USAC program is involved in this problem area, it seems logical to consider USAC in the role of an inter-agency coordination committee in this area on a continuing basis. In addition, this committee could serve as the focal point for state and local input. More effective organizations, however, are needed at state and local levels to ensure technically sound input. The proposed Information Coordinating Offices could be quite effective in this role. The Intergovernmental Task Force Study actually suggested a similar role for these offices.

#### 4.5.4 Technical Information Exchanges

There are two basic aspects to the exchange of technical information, each pertinent to the transfer of USAC technology. The first is that of diffusing information about the available technology throughout the states, counties, cities, etc. This is currently being accomplished by the public interest groups through their general publications and periodicals, and through seminars and professional meetings and conferences. The continuation of this role would be necessary to the USAC Transfer Program.

The second aspect is that of providing technical information clearinghouse services in which the objective is to see that the information systems knowledge is automatically disseminated to the appropriate organizations within state and local governments. A technical capability to identify and assess the value of technical documentation from many private and public sources is essential to this function. The National Technical Information Service (NTIS) provides library services, but does not perform the clearinghouse functions envisioned here. While OMB Circular A-90 encourages federal agencies to share information systems knowledge with state and local governments, no mechanisms have been created to accomplish this.

A public technology clearinghouse sponsored jointly by the National Science Foundation (NSF) and the Council of State Governments (CSG) has been proposed to cover all public technology. This is much broader than the interests of USAC

technology transfer. The Intergovernmental Task Force Study proposed an Intergovernmental Information Systems Exchange under the Advisory Commission on Intergovernmental Relations (ACIR). This idea has already been rejected by ACIR as inappropriate. Public Technology, Inc. (PTI) has, during the past year, been studying the feasibility of establishing a technology clearinghouse under a grant from the National Science Foundation.

The technical information clearinghouse function in support of USAC technology transfer could be effectively performed by PTI. While separately incorporated, it is affiliated with all of the public interest groups representing state and local governments. It is also staffed with technical personnel oriented to the problems of state and local governments. The technical aspects of assessing technical information could be supported by a collaborative arrangement with the National Bureau of Standards groups who have expertise in computer systems science and management science.

#### 4.5.5 Technical Assistance

The U.S. Civil Service Commission (CSC) now provides a variety of technical assistance to state and local governments under the Intergovernmental Personnel Act. In addition to the exchange of technical personnel, the Act also authorizes other types of technical assistance associated with information system developments. These resources are available to satisfy needs generated by the USAC transfer

program. Federal agencies are also empowered to provide technical assistance in many forms as described in OMB Circular A-97. Most of the technical assistance **available** through CSC and the federal agencies is provided on some type of reimbursable basis, although outright grants are possible. The Department of Housing and Urban Development could, for example, establish a federal assistance program for the transfer of USAC technology. The coordination of proposed projects and the monitoring of projects under such a program could be effectively carried out by the structure of USAC, the agency information coordinating offices, the state and sub-state structure of clearinghouses and the proposed information coordinating offices.

The Intergovernmental Task Force Study also recognized the need to establish programs of technical assistance outside of federal programs. The USAC technology can and should be made available to state and local groups working on their own initiative. The types of initiative proposed would involve the public interest groups and state and regional associations of these groups developing and sponsoring a variety of programs. One example would be a program of orientation and training for local governments in information systems techniques and applications. The National League of Cities (NLC) is already involved in programs of this nature sponsored by the USAC program. As the USAC transfer program evolves, these types of programs should be encouraged and

supported. One important area of needed support would be that of providing technical assistance in state-of-the-art assessments related to USAC technology.

#### 4.5.6 Standardization

NBS is responsible for the coordination of national ADP standards activities with state and local governments. The state and local input is now gathered through the state ADP coordinators. The system is not effective for two reasons. Comments from the state coordinators are sought only after the standards committee work is essentially completed. Additionally, in most cases, state comments are not made. The deficiencies appear to be due to a lack of state and local representation in national standards committee work and a lack of procedures for polling the technical views within states. The Intergovernmental Task Force Study recommended active participation in the national committees and proposed representation from the public interest groups. This seems to be a feasible solution, and it could be encouraged by USAC on the basis of the potential contribution of USAC technology transfer to the standardization of data elements and codes. The most logical organizations for coordinating state and local input to the committee would appear to be the proposed Information Coordinating Offices.

## 5.0 PROPOSALS TO FACILITATE USAC TRANSFERABILITY

### 5.1 Introduction

The proposals to facilitate the transfer of USAC technology are summarized in this section. They are grouped according to the three aspects of transferability which were examined in the previous sections of the report as follows:

Section 2.0 - The Research Objectives

Section 3.0 - The Transfer Products

Section 4.0 - Organizations for Transfer.

In the paragraphs following, the proposals are referenced to the particular paragraphs from which they are taken.

### 5.2 The USAC **Program** Research Objectives

The following additional studies are proposed to assess the achievements of the prototype systems projects in satisfying the research objectives of the program, and to provide independent and objective evaluations for potential transferees:

- ° Analysis of the prototype systems functional structure (Para. 2.3.1).
- ° Evaluation of the decision-making capabilities in the prototype cities (Para. 2.3.1).
- ° Evaluation of the technical aspects of data security and control (Para. 2.3.2).
- ° Evaluation of the prototype systems impact on the organization and the community (Para. 2.3.3).
- ° Evaluation of the technical quality of the prototype system designs (Para. 2.3.4).
- ° Cost/benefit analysis of the prototype systems (Para. 2.3.6).

### 5.3 The Transfer Products

The technical products of the USAC program can be classified as systems level products, and concepts and techniques products.

Of the systems level products, the transfer of subsystems appears to offer the largest potential payoff for the USAC program transfer objective. The feasibility of establishing a subsystem level transfer program could be enhanced by the selection of Public Finance as the most logical starting point. This area seems to be most suitable for selection as the initial transfer project to demonstrate its adaptability to different types of jurisdictions, and data processing environments (Para. 3.2.2).

For the transfer of concepts and techniques, it is proposed that they be identified, classified and separately documented for dissemination (Para. 3.3).

### 5.4 Organizations for Transfer

The following proposals concerning organizations and possible roles with respect to USAC technology transfer are summarized from the discussions in Paragraph 4.5.

#### 5.4.1 Federal Level Coordination

##### ° Use Existing OMB Circular A-95 Procedures

The existing procedures for review of proposed federal assistance projects by the clearinghouses and federal agencies are appropriate for USAC transfer. The continuing efforts to seek better alignment of state designated planning areas with federally sponsored planning areas and the corresponding realignment of clearinghouse reviews, should contribute to the effectiveness of the intergovernmental coordination of information systems projects.

° Expand the Role of USAC

This committee, supported by its technical review board, should be chartered to function as an inter-agency coordinating organization for information systems development projects under federal assistance programs. The functions of the committee should be expanded to include:

- ° Technical review of proposed information systems for compatibility with state and local developments.
- ° Coordination of data requirements.
- ° Continuing development of a standard socio-economic data base.
- ° Serve as focal point for coordination of federal requirements through the ACIR.

° Specify Federal Agency Coordination Role

The role of the federal agency information coordinating offices in inter-agency coordination should be specified to include active participation in and support of the expanded functions of USAC.

° Federal Standardization

The functions of the NBS in coordinating federal and national standards activities with the interests of state and local governments are currently accomplished through the state ADP Coordinators. The effectiveness of this role will be enhanced by the proposals to improve the participation of state and local governments in the standards programs which are described in the succeeding paragraphs.

° Technical Support

With respect to USAC technology transfer, expertise in computer systems science, management science and systems analysis could be effectively utilized in support of the program. Three areas of support immediately apparent are:

- ° Provide technical support to the USAC Inter-Agency Committee in its expanded role.
- ° Provide technical support to the Information Systems Technology Clearinghouse (proposed below).
- ° Provide technical support to the technical assistance programs developed by the national public interest groups (proposed below).



NBS, for example, has provided such technical support.

#### 5.4.2 State-Local Coordination

State and local organizations are required to serve dual purposes in the coordination of information systems development. Each is related to the goals of USAC transferability. They must operate to coordinate federal projects with state and local efforts. They must also operate to improve the technical quality and compatibility of information systems developed under state and local government initiatives. Based on the considerations in Paragraph 4.5, it is clear that state and sub-state organizations performing the following functions are vital links in intergovernmental coordination.

- Planning and coordinating systems development.
- Providing professional and technical assistance in the design of systems.
- Coordinating the technical aspects of information and data flow among governments.

While the establishment of such organizations must rely on the states and local governments, federal level initiatives can influence their response. The establishment of new organizations for the coordination of programs **at the federal** agency level, as proposed in this study, represent one such initiative. It is also proposed that USAC directly explore the feasibility of enlisting state support in the establishment of coordinating organizations similar to the proposed Information Coordinating Offices, in response to the potential benefits of the USAC technology transfer program. The national public

interest groups would, of course, play a key role in such a study. The use of the National Association for State Information Systems (NASIS) is also suggested. NASIS, which is an outgrowth of the Intergovernmental Task Force, fully recognizes the problems of intergovernmental coordination in information systems. The state ADP Coordinators were established through collaboration with NASIS. The membership of NASIS is comprised of members of the executive, legislative and judicial branches of state governments. NASIS has established a permanent staff at the headquarters of the Council of State Governments. It is actively engaged in programs related to the coordination of information systems.

#### 5.4.3 Role of the Public Interest Groups

The existing role of the public interest groups in federal, state, and local consultation through the ACIR is consistent with the proposals for federal agency coordination. However, the focal point of contact for matters pertaining to information systems developments should be USAC, in lieu of individual agencies.

The current role of the public interest groups in the dissemination of information pertaining to information systems should continue to expand as the USAC technology transfer program proceeds.

An organization such as PTI may be the most appropriate organization to function as the Information Systems Technology Clearinghouse.

It is also suggested that the public interest groups be encouraged to develop and operate national programs through state and local associations, directed to providing technical assistance to local governments related to the application of information systems technology.

## APPENDIX A

### FEDERAL AND STATE PLANNING AREAS

OMB Circular A-95 encourages states to establish a system of planning areas which can provide a consistent geographic base for the coordination of federal, state and local programs. The jurisdictional problems created by federal programs at state and local levels has been compiled and published by the Department of Commerce Economic Development Administration in its report on Multijurisdictional Planning Areas in the U.S. dated May 1971 which is the latest compilation. The status of alignment of federal and state planning areas is summarized below based on the data compiled in this report.

#### ° State-Designated Planning and Development Areas

These substate areas are intended to define the multijurisdictional boundaries of planning areas within each state and thus eliminate confusion over the planning required in connection with federal programs. As of January 1971, thirty-eight states had defined substate regions or districts. The areas thus established are normally coterminous with county boundaries. While most of the states have established substate regions and districts, the accomplishments thus far represent only a modest progression toward the fulfillment of the A-95 objectives. Most of the areas that have been designated must achieve some viable organizational structure representing the interests of the jurisdictions involved, and must develop a capability to plan and coordinate the various programs before they could function as A-95 clearinghouses. Twelve states are completely organized into substate districts or regions and have been designated as planning and development clearinghouses. Four states have no plans to establish substate areas. The remainder are in various stages of progress. The ultimate objective of the A-95 Circular is to cause the alignment of all federal programs with

the state designated planning districts or regions.

° Economic Development Districts (EDDs)

EDDs represent target areas for planning solutions to problems of economic stress. By law an EDD must contain at least two labor market areas exhibiting economic stress, and at least one community with a potential for economic growth and thereby creating jobs. Designation of an EDD requires that a plan for economic development be prepared and approved by the Economic Development Agency (EDA) of the Department of Commerce. The organization of an EDD is usually a private or non-profit corporation. There are approximately eighty-eight EDD's either designated or funded in thirty-eight states. EDD's are most often concerned with non-metropolitan regions. The alignment of federal programs with state defined regions and districts is of interest to the EDA because of the benefits of the coordinated planning for economic development. Of the thirty-eight states that have EDD's, the alignment of EDD boundaries with the substate boundaries has been essentially achieved in twenty-three of them.

° HUD Comprehensive Planning (701) Grants

The 1954 Housing Act provides for comprehensive planning grants to metropolitan and non-metropolitan planning bodies. They include, regional planning bodies, councils of government, Local Development (within the Appalachian Regional Commission), and Economic Development Districts (EDDs). Of the some three-hundred planning agencies or districts established throughout the U.S. there is a general alignment with the state designated districts or regions in only twenty-five states.

° Resource Conservation and Development Areas

The Department of Agriculture provides technical and financial assistance for the conservation and development of natural resources. Technical assistance is provided through the Soil Conservation Service (SCS) primarily for the development of plans in conjunction with the sponsoring organization which may consist of the soil conservation district, a development corporation, or a governmental body. The target area, depending on the sponsoring organization, may or may not follow county lines. Specific conservation or development projects are funded based upon the plan developed. Sixty-five project areas have been established in forty-two states. In only five states is there any substantial agreement between the state designated districts or regions and the Department of Agriculture project areas.

° Comprehensive Health Planning Areas

The Public Health Service makes grants for area-wide assessment of available health care services and resources and the planning for their improvement to satisfy health needs. The district or regional organization structure may consist of almost any type of public or non-profit organization. Most districts were, in fact, formed specifically to receive these funds. There are about 137 health planning districts established in forty-five of the states. In twenty-two of the states, there is a general conformance with the state designated regions and districts.

° Department of Labor Manpower Planning Areas

Manpower planning areas were established by the Department of Labor in order to coordinate all of the manpower programs for a given area. The coordinating device within the area consists of a committee composed of representatives from the local manpower programs. The committees are coordinating bodies only, and not planning bodies. Planning for management programs geared to the needs of the area, is presumably accomplished by some other body or agency. In some states, separate committees have been established to represent the metropolitan areas, with a single committee designated for the remainder of the state. This appears to be the case in seventeen states. In only three states, however, is there any match between the boundaries of the state designated districts or regions and the metropolitan manpower planning areas established by the Department of Labor. Except for three states, (Montana, Alaska, Hawaii) the remaining states are divided into substate regions. In only seventeen of these twenty-nine states is there any substantial alignment of the manpower-planning areas with the state designated regions or districts.

° Law Enforcement Assistance Administration Districts

The Department of Justice makes planning grants for the entire field of law enforcement. Grants are made to the states who allocate them to various types of organizations. In four states, North Dakota, Iowa, Kansas and Rhode Island, any general purpose local government may apply to the state for LEAA assistance which has the effect of minimizing coordinated regional or district planning. The remainder of the states allocate the funds to substate areas. Of these forty-six states, the substate areas designated as LEAA districts correspond to the A-95 state designated regions or districts in twenty-one states.

° OEO Community Action Agencies

Community Action Agencies (CAAs) are funded by OEO to plan for the use of available resources in reducing poverty in urban and rural areas. Area-wide, CAA's can be concerned with neighborhoods in large cities, counties, multi-county areas, and Indian reservations. CAA planning organizations were mostly formed specifically to utilize OEO funds. CAA's exist in every state. Since some CAA's were cities or, in some cases, neighborhoods within cities, it frequently happens that such CAA's operate as separate bodies within a larger regional area. For the most part CAA regional areas do not correspond to state designated regions or districts.

° Air Quality Control Regions

Air quality control regions, which cover the entire U.S. represent areas where air pollution control programs can be effectively implemented. The boundaries, established by the Air Pollution Control Office of the Environmental Protection Agency, are based on national and jurisdictional factors. The regions have little relationship to state designated regions.

## APPENDIX B

### INTERGOVERNMENTAL INFORMATION FLOW

#### B.1 Problems in Intergovernmental Information Flow

The problems related to intergovernmental information flow were largely created by the rapidly increasing number and types of federal assistance programs in recent years. The development of information systems to support planning requirements at federal, state and local levels has paralleled the growth in federal programs. These information systems are, for the most part, sponsored and developed wholly or partially with federal assistance to be responsive to the requirements of a federal program. The problems of geographic alignment of planning areas, and of consistent data bases for use in planning, brought into sharp focus the need to create intergovernmental coordinating mechanisms for federal assistance programs. The necessity for coordination has led to new relationships among federal, state and local governments and planning groups requiring the exchange of reliable information. At the technical level, the essential ingredients for creating this information flow are:

- ° Responsive information systems within local general purpose governments to collect and process the required data.
- ° Technical compatibility of information systems among governments that reduce the problems of media transformation.



- ° Commonality of data definitions and formats.

Basic problem areas which impede information flow are:

- ° There is a lack of centralized coordination of information systems development at all levels of government. Federal assistance programs for development and operation of information systems in state and local governments are fragmented among the many federal programs available. Inadequate coordination of programs at the federal level has resulted in a lack of coordination on a state-wide basis, and on a local or regional basis. Duplication of effort with a consequent waste of resources has resulted. More importantly, the quality of the systems developed vary greatly, making the exchange of information difficult and in some cases unuseable.
- ° There is a lack of responsive organizations for the exchange of technical information among and between federal, state and local governments concerning the needs and requirements for the exchange of information among governments. Many governments proceed with independent systems development efforts because "systems know-how" gained through similar experiences in other governments is not readily available to them. Aside from the enormous waste of resources incurred, the systems developed vary greatly in efficiency and economy, and for the most part do not reflect the latest state-of-the-art in computer system technology. Additionally, the lack of technical information interchange has resulted in the development of systems in which the information is not compatible with the requirements of state and federal agencies for coordinated planning and programming. The lack of coordinated information requirements for social and economic data has probably resulted in the greatest incompatibility of information systems.
- ° Most local governments do not possess the technical expertise to cope with the increasing complexity of data processing technology, and the application of this technology to the needs of government. They are severely handicapped in judging the proposals of private vendors who frequently do not have a complete understanding of the needs of government and the political and social environment in which it must operate. Furthermore, local governments are frequently frustrated by the uncoordinated information requests of the state and federal agencies which must be coordinated with the local government's requirement for information. In

addition to a general lack of technical know-how within local governments, they do not have the resources to embark on innovative and costly system development programs on their own.

- ° The establishment and use of **information** processing standards provides a unique potential for the achievement of compatible information flow between governmental information systems. Within the context of intergovernmental cooperation in solving national problems, the development and use of standard data elements and codes presents the most fruitful area of activity for achieving information system compatibility. While the American National Standards Institute (ANSI) provides a national framework for the development of standards, there is essentially no active interest and participation in this effort by state and local governments. Whether for this reason, or simply because of a general lack of appreciation for compatible information, there is a notable absence of recognized standards for data meaning and representation throughout state and local governments.

## B.2 Intergovernmental Task Force Recommendations

The first requirement is for each individual government to improve its own information systems. A coordinated approach to solving national problems requires the coordination of programs and actions among several departments at the local or regional level, and among several agencies at state and federal levels. There is a need to centralize coordination and guidance over the development and operation of information systems which support these programs. The Task Force report recommends the establishment of Information Coordinating Offices by all states, and by all local governments where the size and complexity warrant. These offices would perform the following functions:

- ° Plan and coordinate the development of information systems used throughout the government, including statistical information.

- ° Provide professional expertise in analyzing and improving information systems.
- ° Prepare long-range (5 year) plans for coordinated information systems development.
- ° Analyze the requirements of chief executives for decision-making information and prepare system development plans to satisfy these requirements.
- ° Audit requests for information by federal agencies and state governments on lower levels of government.

The Task Force also recommends establishment of Information Coordinating Offices in each Federal department and agency. It further recommends that the Office of Management and Budget assume the function of coordination among the federal offices. The functions of the federal level offices would be similar to those of the state and local coordinating offices, i.e., to coordinate systems development within agencies to prevent overlapping systems and information requirements, particularly when such requirements impact information systems at state and local levels of government.

The Task Force report recognized functional information systems in which information is exchanged between federal, state and local government systems. Examples of such systems include agricultural production, crime, education, welfare, health, etc. As this exchange of information continues to grow, the costs of developing the information to meet this need will become very burdensome without close coordination between governments. There is a requirement to ensure commonality of data definition and formats in order to achieve compatibility between systems at the several government levels.

There is a particular need to establish a standard set of requirements for socio-economic data which are in common use in most of the functional information systems. The Task Force recommends the establishment of Intergovernmental Systems Teams with representation from each level of government. The functions of the teams include:

- ° Continuing review of the needs for information at each level of government, and the requirements for compatibility, and related formats and procedures.
- ° Coordination of these requirements across functional areas.

In order to obtain widespread and authoritative response to the above consultation teams, the Task Force recommends the establishment of a State-Local Information Advisory Council to be created jointly by the national associations of state and local governments (i.e., National Governors Conference, Council of State Governments, National Association of Counties, National League of Cities, U.S. Conference of Mayors, and International City Managers Association). The function of this Council would be that of representing state and local governments in providing advice to the federal government with respect to information requirements. The Task Force report also recommends an initial, one-time inter-agency study project be established to determine a basic set of socio-economic data that would satisfy the federal agency program requirements. The study would also include consultation with state and local governments through the Intergovernmental Systems Teams.

There is an urgent need for the dissemination of information systems technology throughout federal, state and local governments. For the dissemination of technical information, the Task Force recommends the creation of an Intergovernmental Information Systems Exchange under the auspices of the Advisory Commission on Intergovernmental Relations with a Steering Committee comprised of federal government and national association representatives. The functions of the Exchange would be:

- ° Maintenance of a central index and **descriptive characteristics** of governmental systems in use or being developed.
- ° Maintenance of a central index of standard data elements and codes, statistical standards, and data processing standards adopted for general use.
- ° Continuously collect and disseminate the above information.
- ° Service inquiries from federal, state and local governments.
- ° Develop an advisory function with respect to system needs and standards, and specific problems which need attention.

The Task Force report proposes three distinct ideas as follows:

- ° Alert local governments to the opportunities and possibilities to participate in local cooperative efforts leading to the sharing of system development costs, and in the operation of systems in shared computer facilities. This could obviously lead to a greater reliance on regional development programs.
- ° Expand the idea of local cooperation to the regional and national level. The Task Force report recommends that national associations and comparable state and regional associations develop national, state or regional programs of technical assistance. Examples

of such programs would include the following:

- ° Pilot studies and programs to develop new concepts and techniques.
- ° Orientation, training and promotion programs directed to local governments on information systems techniques and applications.
- ° Programs to support and encourage the use of the Intergovernmental Information Exchange.
- ° Programs to involve local governments in standards activities.
- ° Enact the Intergovernmental Cooperation Act and the Intergovernmental Personnel Act under consideration in the Congress. The Task Force report envisions that the results of these acts would enable state and local governments to benefit directly from the experience of federal agencies, and from the extensive training facilities of the federal government.

Many of the problems in the intergovernmental transfer of information due to incompatibility of data, could be sharply reduced by a more widespread adoption and use of standard data elements and codes. The Task Force report recommends greater involvement of state and local governments in the adoption and implementation of standards. The substance of their recommendations include the following:

- ° Accelerate the federal program to develop standard data elements and codes and couple these efforts with the functions of the previously recommended Intergovernmental Systems Teams.
- ° Provide state and local government representation on the ANSI X.3 Committee through the national associations.
- ° The national associations, with the advice of the previously recommended State-Local Information Advisory Council, should recommend to their members appropriate executive and legislative actions to implement ANSI and federally approved standards.

## APPENDIX C

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APPENDIX D

ACRONYMS

ACIR	Advisory Commission on Intergovernmental Relations
CSG/NGC	Council of State Governments/National Governors Conference
ERDIP	Experimental Research and Development Incentives Program
ETIP	Experimental Technology Incentives Program
FAR	Federal Assistance Review
FCST	Federal Council on Science and Technology
ICMA	International City Management Association
NACO	National Association of Counties
NASIS	National Association of State Information Systems
NBS	National Bureau of Standards
NGCS&T	National Governor's Council on Science and Technology
NLC/USCM	National League of Cities/U.S. Conference of Mayors
NSF	National Science Foundation
NTIS	National Technical Information Service
OIR	Office of Intergovernmental Relations
OMB	Office of Management and Budget
OST	Office of Science and Technology
PTI	Public Technology Inc.
RANN	Research Applied to National Need
USAC	Federal Urban Systems Inter-Agency Committee



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