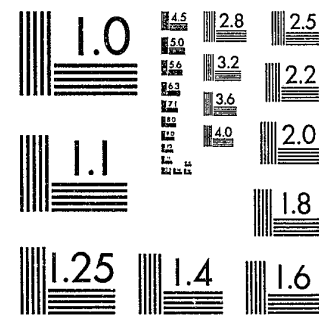


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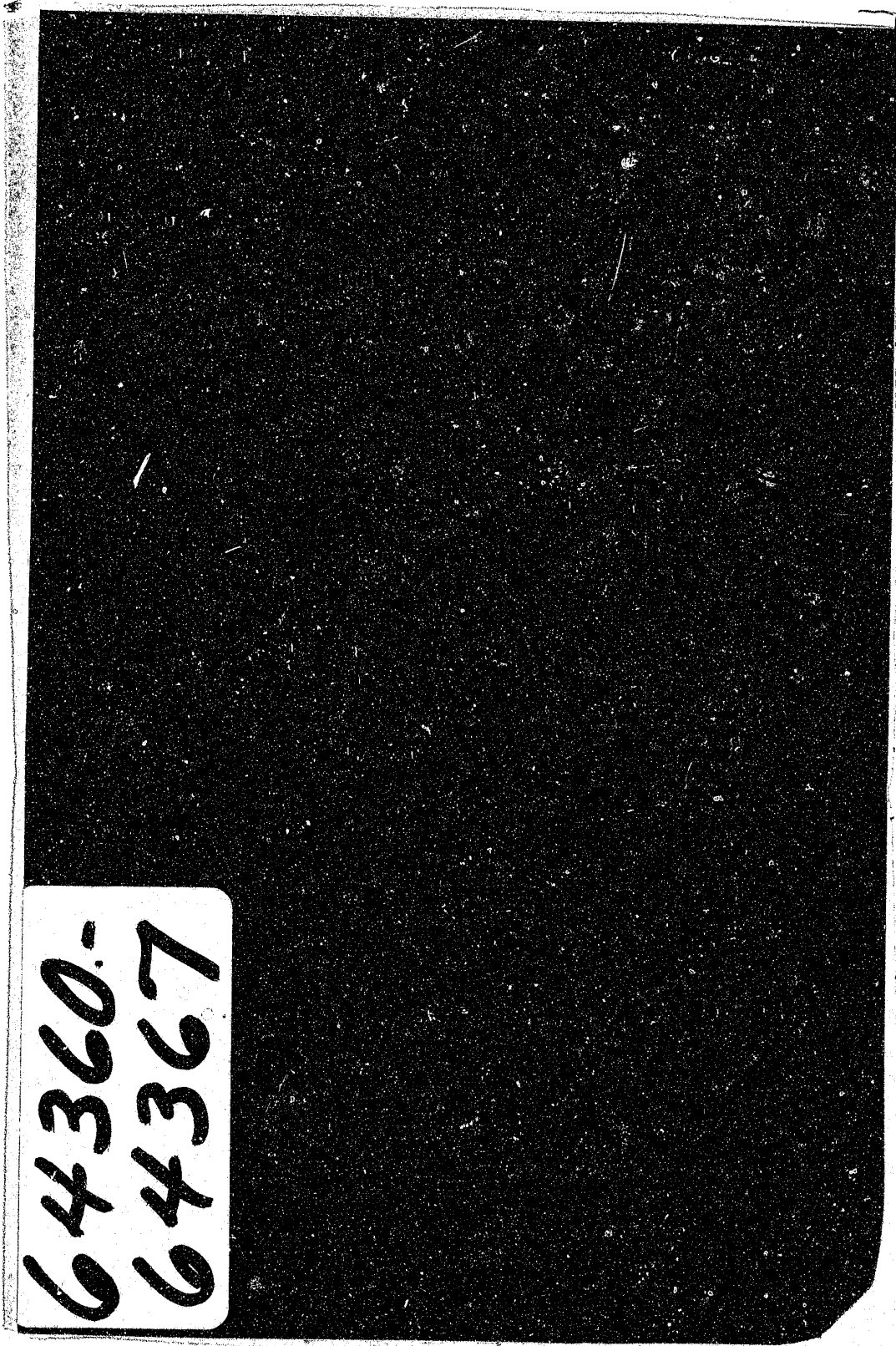
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**Management
Information
Systems
in the
Drug Field**

NCJRS

JAN 24 1980

Edited by **ACQUISITIONS**

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The Services Research Reports and Monograph Series are issued by the Services Research Branch, Division of Resource Development, National Institute on Drug Abuse. Their primary purpose is to provide reports to the drug abuse treatment community on the service delivery and policy-oriented findings from Branch sponsored studies. These will include state of the art studies, innovative service delivery models for different client populations, innovative treatment management and financing techniques, and treatment outcome studies.

Chapter 2, State of the Art Review: Drug Abuse Management Information Systems in Single State Agencies was written under NIDA contract #271-76-5506.

All of the other chapters in this report were prepared under NIDA grant #5 H81 DA 01729-03 to the Coordinating Office for Drugs and Alcohol Abuse, City of Philadelphia.

The material contained herein does not necessarily reflect the opinions, official policy, or position of the National Institute on Drug Abuse of the Alcohol, Drug Abuse, and Mental Health Administration, Public Health Service, U.S. Department of Health, Education, and Welfare.

DHEW Publication No. (ADM) 79-836
Printed 1979

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Stock Number 017-024-00938-5

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1. MIS in Drug Abuse Programs

A Review of the State-of-the-Art

Thomas L. Foster

It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institution and merely lukewarm defenders in those who would gain by the new one.

Machiavelli, The Prince, 1640

This chapter bears testimony to the observation made above. Results from efforts to assess the state-of-the-art and current strategies developed to implement and operate MIS in the drug field are reviewed. These efforts included a conference¹ involving individuals who had been successful in developing MIS, and two series of site visits (see Introduction) to review systems that had been established.

The chapter is organized into four parts, and is concerned respectively with MIS subsystems, presentation of MIS information, factors affecting MIS implementation, and recommendations. The content represents no more than a summary of what has been learned and does not pretend to reveal a definitive or final statement on management information systems.

Client Oriented Reporting Subsystems

The primary external recipients of client oriented information are the Single State Agencies (SSAs) and ultimately the National

¹National Institute on Drug Abuse. "Technical Review of Management Issues and Systems in Drug Treatment." Unpublished conference transcript. Washington, D.C., January 1976. Subsequent citations will read NIDA MIS Conference, 1976.

Institute on Drug Abuse. The principal vehicle for the transfer of this information is the Client Oriented Data Acquisition Process (CODAP). CODAP was originally designed to provide cross-program comparable information for financial resource management at the national level. In recent years there have been efforts to adapt the system to meet management needs at the State, county, city, and program levels.

The CODAP reporting system is composed of two major parts, an admission report and a discharge report, which provide information on the two crucial points in the treatment process. In addition, an activity report provides information on the treatment process to meet NIDA grant and contract specifications. Information from the CODAP system has served a variety of interesting and important decisionmaking needs in recent years. Basic demographic data collected at intake have been aggregated to obtain a more detailed picture of the drug-using population. In particular, data on client age, age at first use, and age at first admission have been combined into trend-analytic studies to shed light on the prevalence of drug abuse and, hence, upon the overall need for treatment services (Hunt 1974). Moreover, CODAP data have, through aggregation by program of the quantity of services delivered, served as a source of operations and fiscal information as well. There are still, however, considerable informational gaps.

Present reporting requirements provide little information regarding treatment and ancillary service needs. As a consequence, admission to a particular treatment modality or service is frequently assumed to be an indicator of need for that modality or service; and subsequent planning of service capacity (e.g., the ratio of methadone to residential slots) is then based upon assumption rather than upon actual needs for services in a particular area as determined by rigorous needs-assessment techniques.

Similarly, there is little information available to Federal and State decisionmakers. Some States have attempted to meet this informational need through extensive (and expensive) followup studies (Social Issues Research Associates 1977). But for the most part, relatively little is known at the State and Federal levels about the efficacy of drug abuse treatment.

One piece of available information which is rarely utilized is the attrition profile of clients in a particular program or modality. If one assumes that longevity in treatment is at least partially related to the satisfaction of client needs, then comparisons of aggregated attrition data can become a useful evaluative tool. (See Harris and Moitra [1977] for a review of this approach in the evaluation of criminal justice programs.)

Client Oriented Planning and Control Subsystems

The client oriented information needs of program and county-level managers are in many ways similar to those at the State and

Federal levels. There is a need for descriptive information about age, sex, ethnicity, etc., so that services can be tailored to the needs of special population groups. In this capacity, the CODAP system or county systems which satisfy CODAP requirements serve adequately. Similarly, county-level planners have need of information bearing upon the geographic distribution of client residence in order to properly allocate services to appropriate catchment areas. Again, where county systems have been implemented to satisfy Federal reporting requirements, geographic data are typically included in intake documents and are therefore available for county planning purposes.

However, neither county-level planners nor local program managers typically have access to information relating to treatment and other service needs. The assumption is usually made that clients applying for or admitted to a particular service are in need of precisely that service rather than something quite different. The result is that the existing mix of services tends to be perpetuated rather than modified to conform to changing service needs.

The deficiency of client oriented evaluative information is much less severe at the county and local program levels. In those counties where centralized information systems have been developed, there is the capability, in principle, of aggregating recidivism data on a program-by-program basis. This capability derives from the practice of uniquely identifying each client within the information system and of maintaining that same client identification through subsequent treatment episodes.

Despite the fact that program-level administrators have consistently indicated that existing reporting systems do not adequately meet their evaluative needs (Creative Socio-Medics Corp. 1976), the sources of client oriented information available to them are substantially richer and more diverse than those otherwise available. The following recent in-house studies are examples of the kinds of information currently being developed and utilized at the program level:

- A residential program in California found that clients who completed the yearlong treatment regimen did not fare significantly better than those who had terminated against program advice after 4 to 6 months, despite the fact that both groups appeared to fare better than those who completed less than 4 months. This finding led to a restructuring of the program's approach to residential treatment.
- A program counselor in Delaware suggested that program "splits" were highly correlated with certain types of therapeutic activities. These activities have been reduced in frequency and intensity, and program retention rates have increased significantly.
- A multimodality program in California utilized routinely collected personality data to determine that clients who appeared to be most responsible to treatment (reduced their

drug use, obtained jobs, etc.) also exhibited greater signs of dependency. Special attention has since been directed toward reversing this unanticipated apparent program effect.

Finally, directors of some exemplary programs have established extensive informal systems to obtain additional client oriented information including weekly clinical staff meetings and frequent meetings with clinical supervisors and individual counselors.

Client Oriented Information Sharing Subsystems

As treatment programs have grown in size and complexity, it has become apparent that clients are likely to receive services from several different program staff members. To the extent that this occurs, it is imperative that each such staff member have access to information about the client, about his or her treatment needs and goals, about treatment progress, and about what each of the other staff members is doing.

The earliest attempts to meet this informational need relied upon extensive informal contact between counselors and upon the use of a general program log as a vehicle for intraprogram communication. When these efforts proved inadequate to the task of information sharing, some programs moved to a caseload system wherein each program counselor would function as the locus of information regarding a particular group of clients. More recently, as programs continued to expand and to increase the diversity of available services and the diversity of personnel, greater reliance has been placed upon the development of a detailed client file containing records of each service contact.

Yet even a cursory review of client files in practically any treatment program suggests that this approach is also inadequate. While files typically contain a great deal of data in the form of service documentation, they contain relatively little useful information. What appears to have gone awry is that the Federal (and State) monitoring emphasis upon documentation of services delivered through the use of client files has supplanted the normal and beneficial use of these files as a means of staff communication.

Some programs have developed new and perhaps more constructive approaches to the need for client oriented information sharing. For example, several programs have established two parallel sets of files, one for service documentation to satisfy the external auditors, and a separate one for counselor treatment notes. While the necessity for this distinction is unfortunate, it is at least possible for each staff member to obtain the needed information about a particular client's progress and goals.

A second approach has been the establishment by some programs of a series of clinical staff conferences. A typical format has been that each client is discussed at length at least once every 60 or 90 days, and that the progress of other clients is highlighted as necessary during the interim. Not only do these regular

conferences serve as a valuable means of information sharing, they also provide a useful vehicle for ongoing staff training.

Operations Reporting Subsystems

Extensive information is available to State and Federal officials regarding the operations of drug abuse treatment programs. Not only is information available through the CODAP documentation of services delivered, but it is systematically augmented through periodic site visits by both State and Federal program monitors. Moreover, several States have established additional channels for information regarding program operations through the use of periodic narrative reports prepared either by the programs themselves (e.g., Michigan State Office of Substance Abuse Service 1976) or by outside evaluators working in conjunction with program personnel (e.g., Marlo et al. 1975).

Operations Planning and Control Subsystems

At the county level the potential for useful information regarding program operations is substantial. A recent innovation adopted by Wayne County, Michigan, focuses basic data collection on the program counselor rather than on the individual client. Thus, each counselor accounts for his or her time indicating which clients were served, what services were delivered, and for how long. These data are then restructured to comply with client oriented reporting requirements and aggregated by counselor and by program to provide a systematic accounting of program activities.

In addition, in several metropolitan counties individual staff members are assigned to work with local programs. While a primary function of these contacts is to insure that program documentation is in compliance with Federal and State requirements, they also serve as a valuable source of information to county officials regarding program operations.

Similarly, at the program level managers appear to have available a variety of informational sources regarding program operations. In most larger programs directors have moved to establish more clear-cut lines of administrative and clinical responsibility, thus creating an organizational hierarchy which facilitates the flow of information (rather than data). There is a correspondingly greater reliance upon clinical and other supervisory personnel as sources of information through routine administrative meetings and conferences as well as through ad hoc requests for special reports and briefings.

Fiscal Planning and Control Subsystems

Despite the fact that most larger programs retain the services of an accountant, or at least a professional bookkeeper, and that the fiscal data collected in almost all programs are adequate to insure

at least minimal standards of fiscal accountability, it is nonetheless true that relatively little useful fiscal information is available either at the county or treatment program levels. This is primarily because program accounting and fiscal management systems have been developed almost wholly independently from those MIS subsystems which focus on clientele and/or operations.

While this is less keenly felt at the county level, where each program can be viewed as a cost center in its own right, it is of particular concern at the program level, where a variety of services is delivered to each individual client. Program directors are as a result unable to allocate various program costs to particular services or to particular groups of clients. The significance of this inability lies in the growing need to seek fee-for-service payments from alternative third-party sources such as private insurers, title XX agencies, etc. In many cases these alternative sources require firm and justifiable cost estimates for particular services. Thus programs lacking a system of cost accounting will encounter difficulties in obtaining third-party funding.

External Environment Planning and Control Subsystems

While program directors are usually well enough informed about their own programs, they suffer from a paucity of information about the external environment. Most program directors are only vaguely aware of the variety of funding resources available through various State, Federal, and private agencies. While NIDA has made some attempts to disseminate this sort of information (e.g., Priesman 1976), there has been little followthrough by State and county officials. It would be helpful if county drug abuse coordinators would begin to view their role at least in part as a clearinghouse for information which is vitally needed at the program level.

A similar informational gap exists regarding the activities of other programs. Many program directors are unaware of what is being done by other service providers--both substance abuse programs as well as other human service agencies--within their own communities. In this context, the failure of county- and State-level officials to facilitate the flow of information is exacerbated by the continuing climate of suspicion and mistrust which pervades interprogram relations. Moreover, even at the county or umbrella agency level, planners and other officials are frequently not cognizant of the services available through providers outside their own sphere of control. In the past, the consequence of such informational gaps was thought to be an unnecessary duplication of services. In the present era of limited resources, it seems likely that the result will be the failure to make needed services available. The ultimate victim will be the client rather than the taxpayer.

External Environment Information Sharing Subsystems

Just as it is important for program directors to be aware of those services that are available elsewhere within the community, it is important for individual counselors to have access to the same information. The result of a counselor's ignorance of available services is that the client will not have access to them. It is usually those counselors most in need of such information who are also the least informed counselors in central intake or central referral units. Not only do these counselors need to know about the availability of various services, they also must be aware of which programs are functioning well and which poorly, of which programs have open slots and which have waiting lists, of which prefer certain types of clients, and of which have eligibility requirements that might hinder prompt admission. Relatively little has been done to make this information available. Instead, intake and referral workers remain largely uninformed even about the programs to which they make frequent referrals.

SUMMARY

With the exception of subsystems designed to provide information regarding program operations, there are serious gaps in the information available to decisionmakers at all levels. Information regarding service needs and treatment results is typically unavailable to managerial and external decisionmakers. Even at the counselor level, relatively little useful information is communicated through client files and other program records. Fiscal subsystems, while adequate to the task of financial accountability, offer little assistance to the program manager in relating costs to specific services or program activities. Finally, neither program directors nor key staff members have sufficient information available regarding the environment in which their programs function.

THE PRESENTATION OF INFORMATION: FORM AND PROCESS

An important design characteristic of information systems is the extent to which decisionmakers actually have access to information and the extent to which that information can be accessed in a form and format compatible with the decisionmakers' needs. Observations regarding this aspect of the MIS art follow two major themes:

- Much of the information which is made available to decisionmakers is obscured by a substantially greater volume of irrelevant data.
- Much of the information which is in principle available to decisionmakers at the county and treatment program levels is in practice not available at all or, at best, not available in a timely fashion.

Access to Information

In a recent article extolling the virtues of modern EDP techniques, Beehler (1976) notes that one of the traditional complaints of MIS users has been the inability of both manual and automated systems to respond quickly and easily to special requests--for information aggregated in new and perhaps unanticipated ways, and for information which spans multiple data files. His argument is that recently developed techniques of data base management allow for prompt and flexible user access across a broad range of data sets and have thereby resolved these complaints.

Drawing upon these advances in computer sophistication, most of the newer automated information systems in the drug abuse field have made special provisions for ad hoc user access. Thus, the program director can elect to initiate series of special requests. Yet, as noted by Creative Socio-Medics Corp. (1976), most program personnel have quickly become disenchanted with this MIS feature, citing lengthy delays as the primary source of their disaffection.

Such delays have arisen for a variety of reasons, each of which can be remedied. First, there has been the procedural hurdle: Special requests must usually be approved at one or more levels. Next, there is the programming problem: All too often special one-time programs need to be written. Finally, there is the scheduling obstacle: Few, if any, county substance abuse agencies have access to their own computer facilities; therefore, many special requests receive rather low priority in the county or private time-share system. Indeed, the impression is hard to avoid, after following a set of special requests from inception to response, that had the system designers deliberately wished to discourage system use, they could not have done a better job.

Several automated systems contemplate the eventual implementation of online user access, the plan being to install cathode-ray tube terminals in each major treatment program. Yet the present state of the programming art, at least in the drug abuse field, argues against such aspirations. For example, one of the few online systems operating at the county level can handle user queries involving only a handful of variables. Unfortunately most of the truly interesting and important questions require substantially greater flexibility.

Accuracy of Information

Accuracy of information is a crucial consideration in any MIS. However, the accuracy of an information system must be evaluated in the context of particular decisions rather than in the abstract. Certain decisions are highly sensitive to small errors in data collection or manipulation, while other equally important decision situations require only the crudest of estimates. Increased accuracy is never without cost. It must be paid for through either more staff time spent in data collection, more extensive staff

training, broader sampling of data or, alternatively, slower responses to informational requests, more expensive edit routines, etc. In effect, accuracy which substantially exceeds the organization's decisionmaking needs represents wasteful expenditure of resources.

Two basic flaws in the design of data collection procedures in the drug abuse field are:

- Data-collection forms designed primarily to facilitate key-punching (or other data handling procedures) rather than to insure accurate completion by treatment staff.
- Staff ability to report information rather than data is often overestimated.

One has only to examine the forms currently utilized in treatment programs to recognize this. The forms are reminiscent of finance company loan applications. Each page (together with its multiple-color, self-carbon copies) is replete with fine print, with large boxes (captioned, "For County Use Only"), and with small boxes (each accompanied by mysterious, italicized numbers). Somewhere, usually at the bottom of each page, are several lists of codes for individual data items (e.g., "Heroin=01, Amphetamines=02," . . .). In short, the entire set of forms often appears bewildering and confusing. It is little wonder that subsequent edit checks report a myriad of missing data items, failures to follow indicated skip patterns, out-of-range responses, etc. Even clinicians who can prepare accurate and insightful narrative reports based upon their intake interviews may not be able to combine their clinical skills with the process of codified data collection.

What is needed is a method of collecting and codifying client oriented information that will take advantage of the diagnostic and clinical skills of program counselors rather than conflict with and obscure those skills. In the absence of innovation along these lines, it seems likely that much of the clinical information to be adduced from present systems will be built upon a limited or only skeletal base.

Quality Control Procedures

Most of the newer automated systems being developed in the drug abuse field include extensive computerized edit routines designed to insure adequate data quality. These edit procedures typically include:

- Document edits, i.e., checks for missing data, range and plausibility tests, performed on each document submitted.
- Merge edits, i.e., comparisons between newly submitted client records and existing files.

- Cross-file validations, i.e., monthly comparisons between active client files and summary client flow statistics as reported by each program.

In addition, periodic site visits by auditors are utilized to further validate reported data through comparisons with documents contained in client files.

However, there are several problems inherent in this approach. First, while program directors are notified through a monthly printout of all edit exceptions, there is relatively little control over their eventual turnaround, so that the majority of errors go uncorrected.

Second, the edit procedures themselves are not conducive to the eventual reduction of errors. The majority of all computer-detected errors are classified as "nonfatal," i.e., the input document is accepted into the data base despite certain minor errors or inconsistencies. Each of these data collection errors is subsequently noted in the director's monthly edit report, a document several pages long.

These edit reports are merely data, whereas useful information might include, for example, a cross-tabulation between error type and reporting counselor. With information, rather than data, in hand, program directors are better able to respond effectively, e.g., focus training for individual counselors to reduce error commission rates. Instead, what commonly happens is that lengthy lists of edit exceptions are treated as just so much wastepaper.

Finally, to the extent that error correction and document resubmission are required, the process tends to effect an overall bias in reporting practices. Counselors simply do not like additional paperwork, and as a consequence, they learn very quickly what kinds of discrepancies result in fatal errors; that is, errors that must be corrected. Then, rather than becoming more meticulous in their initial reporting, temptation may lead to the habit of underreporting through simplification. For example, if counselors are frequently confronted with fatal errors regarding prior treatment history, they will soon begin to report almost all admissions as having had no previous treatment experience.

System Costs

It is difficult to discuss either the developmental or the implementation costs of existing information systems in the drug abuse field, because there is little available documentation of actual costs incurred. For example, officials in one metropolitan county estimated system design costs at approximately \$50,000-\$60,000 per year for the first few years (Creative Socio-Medics Corp. 1976). (A modular approach to system development was adopted by this county, making it difficult to specify the duration of the design process.) This estimate is based solely upon the salaries

of the system programmers and the computer time actually utilized for system development. No estimates are available for such cost factors as preliminary, conceptual design; obtaining input from intended system users; training of system users; or training of data-collection personnel, e.g., counselors. Officials responsible for the drug abuse MIS in a second county estimated total developmental costs at over \$500,000; however, there are no estimates available of individual cost factors.

Implementation costs may also be estimated on a different basis: the anticipated volume of clients to be "managed" by the system. Figures range from a low of \$30 per client per year to a high of \$72 per client per year. Yet none of these estimates include such ongoing cost factors as printing and distribution of data-collection forms, program staff time involved in data collection, ongoing training of system users and program data-collection personnel, or administrative support.

Some of the cost factors involved in systems development and implementation are likely to be misleading. For example, the costs of staff time for personnel not specifically designated to MIS operations must be evaluated in the context of alternative uses of their time. Perhaps the most conspicuous instance of this problem is the time spent by local program personnel: their input into system design, their time spent in data collection and processing, etc. Program personnel, especially counselors, are almost universally critical of these impingements upon their time. Yet it must be noted that at least some county-level systems require less counselor time than would have been spent in complying with Federal reporting requirements in the absence of a local MIS. Nevertheless, substantial further reductions in the amount of counselor time presently expended in data collection might be effected by more careful planning at the program level.

In short, we simply do not know how much systems actually cost. All we can say is that they seem likely to cost far more than is presently estimated. What is needed, of course, is an accurate and comprehensive cost-accounting system at the county level.

IMPLEMENTATION CHARACTERISTICS OF EXISTING SYSTEMS

Much of the recent MIS literature has called attention to the process of system implementation. Lucas (1975) has observed, "Concentration on the technical aspects of systems and a tendency to overlook organizational behavior problems and users are the reasons most information systems have failed."

This section explores the extent to which drug abuse treatment MISs have achieved the following important objectives for successful implementation: management support; user support; data collection and recorder support; application to decisionmaking.

Support by Management

To obtain effective and visible support of top management, Dickson and Simmons (1970) have noted that in many organizations outside the drug abuse field the task must begin with an effort to overcome a natural resistance of managers. This may result from feelings of insecurity, role ambiguity, anticipated increase in job complexity, and uncertainty or unfamiliarity. Fortunately, most countywide information systems in drug abuse treatment agencies have been initiated directly by county-level managers so that these and other similar sources of resistance have not proven to be major stumbling blocks. Even without resistance by top management, however, their active support has often been neither visible nor effective. Rather than directing their attention to the ways in which county-level subordinates and local program personnel might be convinced of the desirability and importance of the newly developed systems, many officials have relied largely upon "management by fiat" to obtain compliance with system input requirements. Thus, despite protestations to the contrary, the appearance is that systems are intended solely to channel information to top management rather than to meet the informational needs of the organization as a whole.

For example, during interviews most county agency directors went to great lengths to describe the virtues and importance of their information systems. Yet local program personnel indicated that they had little understanding of information needs at the county level. Furthermore, many program directors indicated that efforts by county managers to encourage and stimulate MIS use at the treatment program level were at best perfunctory.

Support by Users

Lucas (1975) has argued that the fate of any information system depends upon obtaining the support of the intended system users. This task can best be examined in terms of three rather distinct objectives:

- Overcoming the natural resistance within any organization to the development and implementation of any new system;
- Cultivating generally positive attitudes and perceptions on the part of intended users toward the particular system to be implemented; and
- Training users in the uses of an MIS.

In their examination of organizational resistance to an MIS, Dickson and Simmons (1970) suggested a variety of factors which appear to motivate the typically negative response of operating managers. These factors include:

- Feelings of insecurity
- Role ambiguity
- Threats to status or power
- Threats to economic security
- Increased job complexity
- Increased uncertainty
- Changed work patterns
- Increased rigidity
- Added time pressure

It is not difficult to appreciate the impact of these pressures upon treatment program directors and middle-management personnel. A countywide MIS provides a direct channel for information to county-level officials; a channel which, in effect, bypasses the program manager and eliminates his or her opportunity to filter selectively the upward flow of information. Moreover, the information obtained at higher levels is very likely to be used to evaluate the program's performance, a threatening contingency to many managers. Finally, the implementation of any MIS involves added supervisory time and increased responsibility upon the program director for the performance of the system itself.

One potentially effective response to these sources of resistance by intended users is to allay their concerns and suspicions by involving them in the system design process itself. Lucas (1975) places considerable emphasis on this strategy to develop user support. Even with the efforts that have been made in this direction in the drug abuse field, it was reported that those efforts have typically failed to be responsive to the concerns of local program personnel.

During the development of most existing systems, program directors have been asked about what information they would like. Yet only rarely have they been asked about how and when they would like to receive that information. Perhaps more significantly, program directors are never asked, at the outset, whether they would like an MIS at all. In short, while gestures have been made toward user involvement there has been little attempt to operationalize that involvement. As a consequence many systems are viewed with anxiety and suspicion by the intended system users. Beyond placating such anxieties and suspicions, there remains the ongoing task of cultivating positive user attitudes toward the developed MIS.

Lucas (1975) cites several factors which underlie user perceptions and attitudes, including the technical quality of the system; the policies and apparent attitudes of the MIS department and staff;

and the nature of the ongoing contacts with MIS personnel. Lucas also includes in this list the level of support by top management. Most program directors interviewed were skeptical about the technical quality of the information systems developed at the county level. This skepticism often focused on the accuracy of available information. For example, despite the ability in principle of several automated systems to track client reentries into the treatment network, this source of information is not utilized by program directors because they do not believe that the data are sufficiently accurate. Similarly, in those counties where centralized intake units complete initial client "workups," most program counselors report that they cannot rely upon the accuracy of data collected by these intake centers; instead, they typically repeat the intake process in order to develop more accurate internal records. Finally, in one county where the automated system appears to be well suited to responding to Federal reporting requirements, the monthly client flow summaries are completed manually, based upon telephone queries, in part because of a general feeling that the MIS data base is often inaccurate.

Additional user skepticism can be traced to the format of the available output and to the problems and delays encountered in accessing the system. Many program directors have emphasized that existing systems do not meet their information needs. More specifically they cited:

- Bulky computer printouts that contain masses of data (but little information) and which are difficult to comprehend;
- Frequent and lengthy delays in obtaining special reports;
- Failure to meet schedules for routine output; and
- Inflexibility of routine reports, i.e., the inability of the MIS unit to incorporate the special requests of a particular program into the regular reports issued to that program.

Despite several of the newer drug abuse information systems having the potential for producing special reports and even for online user access to the data base, many program directors pointed out that it is not an easy matter to obtain specific information on an ad hoc basis. Instead they impute a general feeling at the county level that if the potential system users were to become actual users, system operating and maintenance costs would substantially exceed projected budgets. Thus, program personnel typically must submit requests for information and await the results of lengthy administrative approval processes. Several directors expressed resentment over this, saying in effect, "They don't really want us to use the system; it's for them, not us."

Finally, it should be noted that by far the most frequent circumstance of contact between MIS personnel and program-level users is the correction of input error. As Lucas (1975) points out, "Contact is generally thought to improve the attitudes between two groups of individuals by increasing understanding. However,

when contact occurs under unfavorable conditions, worse attitudes may result."

It is not enough that the attitudes and perceptions of the intended users be positive. Even if this were true, the MIS might still falter because of unfamiliarity by human services personnel with the effective use of information. Program managers often do not know what information they actually need. "Instead, expecting to use nothing, they ask for everything" (Foster and Evans 1977).

This dilemma was also noted by Ackoff (1967), who made the observation that such requests ought to be viewed as rational, defensive behavior on the part of managers who do not entirely understand the phenomena they control.

It appears that many program administrators are uninformed about the ways in which quantitative information can be utilized to enhance decisionmaking. Not only are they unfamiliar with the ways in which data can be brought to bear upon specific informational questions, they are equally unprepared even to ask appropriate questions. County-level managers have made little effort to provide program personnel with the training necessary for competent and productive system use.

In summary, the implementation of existing systems in the drug abuse field has suffered seriously because of the failure to enlist the support of intended system users. The need is to recognize and adequately cope with the natural sources of anxiety and to cultivate positive user perceptions of and attitudes toward the MIS system, its component units, and county administrations. The effort must include training the program managers in the use of the systems.

Support at the Data-Collection Level

A third group whose support is necessary to the successful implementation of any information system is the personnel responsible for data collection and recording. Pittel (1974) has commented at length on the many subtle and not so subtle ways in which systems are sabotaged at the data-collection level. These range from active and vocal resistance at the outset to:

- Failure to report accurately on complicated or sensitive cases.
- Frequently missing data items.
- Data-collection biases toward simplification and underreporting.
- Failure to submit data in a timely fashion.
- Failure to correct data-collection errors as noted by subsequent edit procedures.

Based upon interviews with counselors, there appear to be three factors which underlie these problems. First, many counselors have yet to be convinced of the integrity of recently instituted confidentiality requirements. Moreover, their general lack of familiarity with the potential for safeguards on access to computerized records and their perspective of county-level officials as being "outside" the actual treatment system do little to allay these concerns over confidentiality. Finally, the occasional, well-publicized abuse of confidentiality in an MIS serves to exacerbate these concerns.

Second, counselors frequently cited excessive and complicated paperwork as a primary reason for their misgivings about MIS implementation. The unnecessarily complicated appearance of many data-collection forms and an examination of the data items actually required by most county information systems suggest that counselor time spent completing forms need not be excessive. To account for this disparity between widespread counselor perceptions and apparently minimal time requirements, one must recognize that in most treatment programs compliance with county MIS mandates is only part of a much larger system of required paperwork. Programs are typically required to respond to the informational demands of a number of county, State, and even private agencies to support their funding. Examples include revenue-sharing authorities (often at both the city and county levels), title XX agencies, local foundations and philanthropic organizations, school districts, welfare departments, and criminal justice agencies. And each of these may require that program personnel complete yet another set of forms with slightly (often ever so slightly) different data elements.

A third factor which seems to underlie counselor resistance to data collection is that from their perspective the effort is apparently to no avail. Just as program directors remain for the most part unfamiliar with the uses of information at the county and State levels, counselors are allowed only rarely to observe the use of an MIS in decisionmaking at the program level. In part this results from the little use that is actually made of existing systems. But it also appears that to the extent that these systems are used by program managers, little effort is made to demonstrate to counselors and other program personnel that the data which they have collected have any impact upon program operations.

System Use

Hirsch (1968) has pointed out that information, even the best of information, has value only to the extent that it can influence decisions. Conversely, information systems that are ignored by key decisionmakers are of little value to the organization. One NIDA MIS conference (1976) participant commented that, "It is not our experience that programs are using the information that they have." Interviews with program and county-level personnel across the country confirm this observation. This widespread failure to utilize existing systems can be traced to many of the deficiencies noted earlier in this chapter including:

- The failure of current systems to provide information relevant to actual decision needs.
- The difficulties encountered by program personnel attempting to access specific informational items.
- The typical design of MIS output which seems calculated to discourage the use of information by deluging users with reams of unwanted data.
- Inadequate support for system use by county-level management.
- Skepticism by intended users regarding the relevance, quality, and utility of available information.
- Inadequate training of intended users.

Yet failures in the design and implementation of existing systems do not tell the entire story. Even if each of these deficiencies were to be corrected, it might still be that the use of MISs as presently conceived would not be significantly increased. For what has been largely ignored thus far is the organizational context in which treatment programs and county agencies alike must operate.

Wildavsky (1973) has said that planning and decisionmaking are meaningful activities only to the extent that they are accompanied by the power to implement. Yet administrators at all levels of the drug abuse treatment system are subject to a significant array of organizational and political constraints which substantially diminish the effective range of their decisionmaking ability. For example, while many county-level planners might wish to base their decisions about program funding upon a host of MIS-generated information, e.g., needs assessment, program performance, costs, they rarely are afforded such latitude. Instead their decisions are constrained by political pressures from neighborhood groups, ethnic organizations, and county boards of supervisors (Foster 1976). Similarly, while program-level administrators might wish to encourage counselor performance by instituting a system of bonuses tied to performance (as documented by an MIS), they find that such a strategy is proscribed by current funding regulations.

In short, many of the decisions which are potentially available to managers in the drug abuse field are not, in practice, currently realistic alternatives. Many of the truly important decision situations which do arise are perforce settled by political and bureaucratic considerations which have little to do with existing information systems. Thus, even at the county level the most prevalent uses of current MISs are:

- To document and justify decisions already made for quite different reasons.

- To convince State and Federal funding authorities that the county agency is doing its job adequately, as witnessed by the mere existence of its technologically advanced MIS.
- To provide information to State legislative bodies in an effort to increase the flow of funds into the county.

While these are perhaps laudable and certainly understandable objectives in their own right, it seems unlikely either that they reflect the original intentions of the county-level managers or that their attainment is ample justification for the substantial costs incurred.

Designers of information systems would do well to examine carefully the nature and extent of actual decision alternatives available to managers (as well as to subordinates) and to design systems which respond to those perhaps more limited decisionmaking needs, rather than to the hypothetical needs of ideal managers in rather different kinds of worlds. That existing systems appear to be technologically sophisticated should not be allowed to obscure their meeting decisionmaking needs which are at best merely hypothetical, while failing with equal frequency to meet the actual needs of real-world managers.

RECOMMENDATIONS

The development of information systems in the drug abuse field is a relatively recent endeavor and the lessons and examples, both good and bad, which could have been drawn from other organizational contexts have been largely ignored. The recommendations which follow are an attempt to apply some of those lessons. Three criteria have guided their selection. First, to effect a significant and lasting impact upon MIS performance and hence upon the programmatic performance of treatment organizations. Second, to appear feasible in light of the existing bureaucratic and political environment in which such agencies must operate. Finally, to promote a strategy which builds upon the nature of existing systems rather than advocating a wholly new beginning.

Four broad categories of intent are discussed:

- Recommendations designed to increase the congruence between available information and actual decisionmaking needs.
- Recommendations designed to enhance the availability of information to decisionmakers.
- Recommendations designed to reduce the burden of information systems on treatment programs.
- Recommendations designed to increase the level of support for existing systems throughout the treatment network.

Meeting Real Decision Needs

The stronger single theme throughout this chapter has been the importance of matching the generation of information with actual decisionmaking needs. Paretta (1975) has commented that this matching of information flow to the requirements of system users is "critical to the success of all information systems work." Ackoff's (1967) emphasis on gaining an understanding of the nature and locus of actual and potential decisionmaking goes directly to the crux of the problem: The function of any MIS is to supply information which bears upon particular decisions. Yet to organize the design of information systems around particular needs encountered in an organization requires an adequate understanding of those needs. There is no such understanding, and instead the design of information systems has typically followed two rather different strategies.

First, it has been assumed that the intended system users know best what information they need. The design of practically every operating MIS in the drug abuse field has included as least some gesture to this maxim either through meetings with treatment program managers or through formal or informal surveys. This approach is unlikely to be successful. Ackoff (1967) contends that one of the major fallacies of MIS design is the assumption that the manager knows what information he needs.

For a manager to know what information he needs he must be aware of each type of decision he should (as well as does) make and he must have an adequate model of each. These conditions are seldom satisfied. Most managers have some conception of at least some of the types of decisions they must make. Their conceptions, however, are likely to be deficient in a very critical way, a way that follows from an important principle of scientific economy: the less we understand a phenomenon, the more variables we require to explain it. Hence, the manager who does not understand the phenomenon he controls plays it "safe" and, with respect to information, wants "everything".

Second, regardless of the extent to which suggestions have been solicited, designers typically proceed to develop systems to support decisions which they believe ought to be important. In effect, it is assumed that the planned information system will function as somewhat of a change agent within the organization, focusing attention upon those issues which appear to be important. A value judgment is made, or inferred, instead of exercising an objective, analytic, and facilitative stance responsive to real, idiosyncratic system needs. Therefore, rather than leading managers to new and presumably more sophisticated decisionmaking, such systems are often soon ignored by program directors and counselors alike.

As an alternative, it is recommended that those who design information systems become more intimate with the decisions which

are actually made at various levels within each local program, not merely by asking but by becoming involved, at least as a participant observer, in the program's decisionmaking processes. The spirit of such a recommendation runs counter to a major trend in MIS development in the drug abuse field: the design of model systems. Instead, the implication is that systems ought to be tailored to meet the unique decisionmaking needs of each organization. As Paretta (1975) has insisted, "No one model exists which has universal applicability. Each model must be matched against [an organization's] changing needs dictated by its state of development and available resources." Several recommendations relating to each kind of informational gap appear in table 1.

Enhancing the Availability of Information

One of the primary tasks of MIS design is the specification of the ways in which information is moved to the decisionmaking point. Among the most conspicuous failings of existing information systems is that much of the needed information which is available within the system is in practice difficult for decisionmakers to obtain.

Sprague and Watson (1975) have emphasized the importance of an inquiry system for special informational needs not covered by routine reports. Most existing information systems do include such a plan in their design. Yet in many cases the process of accessing needed information through such inquiry systems is fraught with lengthy delays. As a consequence, the consensus of most program directors is that the county information systems which ostensibly serve them were, in fact, never intended for their use but were instead designed to meet the needs of county and State-level personnel. One of the most significant and far-reaching changes which might be made in existing information systems would be the restructuring of these inquiry and special report procedures to facilitate ad hoc access by program personnel.

Of equal importance to MIS performance is the form in which information is provided to decisionmakers. Consistent with the observations of Dickson (1968) regarding MIS design in other fields, managers and other decisionmakers in the drug abuse treatment field are typically deluged by irrelevant data. The effect of this deluge is to obscure the relatively few items of truly useful information and hence to minimize the likelihood of effective system use.

Ackoff (1967) has suggested that the emphasis in systems design should be upon the processes of "filtration and condensation." Two specific contexts in which this recommendation has gone unheeded are:

- The routine, computer-generated reports which are provided to program directors
- The potential use of client case files as a source of clinical information

TABLE 1.—Suggested strategies for reducing informational gaps

Informational gap	Type of decision	Locus of decision	Recommendations	Where action is needed
Information regarding client needs for various treatment and ancillary services.	Treatment and service referral.	Counselor	Training in techniques of treatment and reentry planning.	Programs
	Planning	County	Further research regarding alternative approaches to differential diagnosis and the specification of service needs. For the most part, the requisite data are already being collected. What is needed is an approach to synthesizing these data and/or aggregating needs across client populations.	NIDA
Information regarding the external environment.	Treatment and service referral.	Counselor	Provide intake and referral workers with time specifically allocated to visiting programs and other agencies.	Programs
	Funding	Programs	County substance abuse agencies should serve as a clearinghouse for information regarding potential funding sources.	County
Information regarding the relationship of costs to specific program activities and services.	Budgeting	Programs	Integration of fiscal subsystems into operational and/or client-oriented subsystems.	County, State
			Standardization of units of service.	NIDA

TABLE 1.—Suggested strategies for reducing informational gaps—Continued

Informational gap	Type of decision	Locus of decision	Recommendations	Where action is needed
Information regarding treatment progress and outcomes.	Service planning.	Counselor	Greater reliance upon structured clinical staff meetings.	Programs
	Program planning	Programs	Training in keeping clinical case records (as distinguished from service documentation for audits).	Programs
	Staff evaluation		Analysis of attrition data to determine which kinds of clients terminate treatment and at what point in their treatment plan. Also, correlation of attrition with specific services provided immediately prior to termination.	Programs, county
	Technical assistance planning.	County	Reinstitution of performance monitoring on a status at least equivalent to contract compliance monitoring. Available data include treatment longevity (i.e., attrition rates) and—in some counties—length of time after treatment completion until reentry into the treatment system.	County
Funding				

The observation by Dew and Gee (1973) that more than half of all data items contained in routine computer printouts are ignored by system users may substantially understate the case in the field of drug abuse treatment. Most program directors indicate that they do not make use of monthly MIS output made available by county systems. The implication is that routine statistical output ought to be drastically reduced. Moreover, the format of that output ought to be simplified so that key items of information, e.g., trends, comparisons, are readily recognizable.

The importance of client files as a means of conveying information has been largely ignored. Instead client files are used primarily as a source for cross-documentation during periodic program audits. As a consequence they typically contain much data which are of little use to treatment personnel. In order to enhance the availability of clinical information to counselors (and to supervisors), it would seem appropriate to adopt the following maxim: "Treatment files are for counselors." To the extent that the documentation of service delivery is deemed essential for accountability, such documentation should be entered into a separate set of files designed specifically for that purpose.

Reducing the MIS Burden

One of the most frequently voiced complaints by treatment program staff at all levels has been that compliance with existing MIS and other reporting requirements substantially reduces the time available for the delivery of services. In contrast with this objection to the paperwork burden, the attitudes of county, State, and Federal administrators have inclined increasingly toward stricter standards of programmatic and fiscal accountability, the development of countywide information systems, and a recognition of the need for sound management in the face of limited available resources. The logical synthesis of these apparently conflicting priorities ought to have been the design of information systems which would reduce rather than exacerbate the burden felt at the program level.

While this objective was certainly considered in the design of existing systems, the accelerating trend toward multiple-source funding has worked in precisely the opposite direction. Program directors are obliged to respond not only to the MIS requirements of county substance abuse agencies, but also to the reporting mandates of title XX agencies, LEAA, CETA programs, courts, probation departments, school districts, and city and county revenue-sharing authorities.

For the most part such requirements could be consolidated into a single system. County substance abuse agencies must recognize that the integration of the drug abuse treatment system into a broader network of human services delivery agencies necessitates the negotiation of interagency agreements at the county level to facilitate such a consolidation. At the same time, Federal and State funds ought to be made available for MIS design and

implementation only to the extent that such consolidations have been effected and multiple reporting requirements have been eliminated.

At the program level as well, more careful planning of the data-collection process would contribute significantly to the reduction of burden. For example, much of that burden can and should be shifted to clerical personnel whose primary function is the completion of required paperwork. Thus, rather than make documenting entries (as distinguished from clinical observations) in the treatment records of each participant at a group therapy session, counselors should be required merely to submit a list of those participants to a designated records clerk. Similarly, much of the paperwork required at intake and termination might easily be completed by competent clerical personnel. In short, a substantial increase in counselor time available for service delivery can be brought about by the creation of clerical positions assigned specifically to the tasks of data collection and/or recording.

Finally, additional MIS burden can be eliminated by a revision of the cumbersome and ineffective quality control procedures currently being utilized. Nonfatal errors need not be itemized and returned to the programs for input revision; this practice has typically failed to bring about the desired correction of errors. Instead, they should be summarized by reporting counselor and by error type so that subsequent training can be directed toward error reduction.

Increasing the Level of Organizational Support

There is a need to develop support for MIS implementation at all levels within the drug abuse treatment system from county administrators to program directors to counselors, and even to clerical personnel. While it is true that almost all of the preceding suggestions are calculated, either directly or indirectly, to enhance the level of organizational support, they accomplish that task largely by eliminating or reducing the sources of user disaffection. In contrast, the strategies recommended in this final section focus directly upon building positive attitudes toward MIS implementation.

Even if the burden of a large-scale information system were minimal, program personnel would hardly become enthusiastic MIS advocates simply because there are rarely any visible payoffs either for themselves or for their clients. Program directors and counselors alike need to know about and see the kinds of decisions which an MIS supports at the county level. Similarly, counselors and other program staff members need to understand the ways in which information is used by their directors and supervisors. The objective would be to give personnel at all levels a greater appreciation of the importance of the system and of the benefits which accrue ultimately to their clients.

Second, Hanold (1968) has aptly remarked that in addition to management-oriented information systems, there must be information-oriented managers. Yet, as noted by Touche-Ross and Co. (1976), many program-level managers, while sincere and well intentioned, are neither adequately prepared as managers nor well schooled in the use of information for management decisionmaking. A number of useful training courses have been developed by NIDA in an effort to assist program managers in upgrading their skills. However, these training packages are directed to a diverse audience while the problems faced by individual managers are often particular to their own agency's needs.

A strategy which appears to offer more direct benefits is to institute a program of continuing onsite technical assistance. Field personnel, thoroughly familiar with the possibilities inherent in a particular countywide system, could be assigned to work within a program to identify and demonstrate ways in which the available information can be brought to bear upon management decisions. Emphasis can be placed on decision situations which actually arise in each program rather than merely upon a demonstration of the system's capability. While this process is likely to take some time, it offers the potential benefit of developing program directors who are committed to the use of information in their role as managers.

System users should become more involved at the program level. Opportunities for user involvement in the drug abuse treatment field may include:

- User-controlled steering committees to plan necessary system revisions.
- The development by users of criteria for ongoing system evaluation (Lucas 1974).
- User task forces to investigate alternative resolutions to identified systems deficiencies.

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