THE TRANSPORTATION ISSUE MANAGEMENT SYSTEM: A TOOL FOR ISSUE RESOLUTION

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ABSTRACT

During the last decade, issue management programs have been developed and used by a number of large corporations in the United States. These systems have generally been designed to help senior program managers identify issues, develop strategic plans, and resolve issues. These systems involve scanning and abstracting literature to create a database that is then used for 1) issue identification, 2) issue analysis, 3) priority assessment, 4) development of corporate position/strategic options, and 5) action planning and implementation. Most of the existing systems rely on staff to identify trends in the computerized output, analyze the importance of the issue to the company, and assist in developing corporate responses.

The Department of Energy has recently developed an issue management system for the Office of Civilian Radioactive Waste Management's (OCRWM) transportation program. This system is designed to help DOE identify institutional issues related to radioactive waste transportation, analyze the issues, and resolve them in a manner that is responsive to interested parties. The system will contain pertinent information from DOE technical reports, other federal documents, correspondence, professional journals, popular literature, newsclips, legislation and testimony. The program is designed around a number of institutional issues including: prenotification, physical protection procedures; highway, rail, and barge routing; inspections and enforcement of shipments; emergency response; liability, cask design and testing; overweight trucks; rail service; modal mix; infrastructure improvements; training standards, and operational procedures.

Organizations, both public and private, operate within highly complex environments. Public agencies, in particular, must deal with a multitude of internal and external pressures in their day-to-day implementation of government programs. Public agencies must be aware of and respond to a variety of influences. Especially those agencies responsible for implementation of controversial projects are subject to public scrutiny and media attention that increase the ability of outside organizations to apply pressure to agency decisions. Consequently, these various influences help to define agency actions and management strategies.

In the past few decades, organizations have responded to changing environments by using long range planning, strategic planning, and strategic management systems. These efforts require an organization to anticipate the future and prepare for expected changes at specific time intervals. While there are some obvious advantages to these types of planning, they are not particularly timely in identifying important trends or issues that may vitally affect the organization.

This paper discusses a recent trend in systematic planning--issue management. Issue management programs have been developed and used by a number of large corporations, non-profit organizations, and governmental agencies in the United States, including the Atlantic Richfield Company, United Airlines, Clorox, EPA, and DOE's Idaho Low Level Waste Program (EG&G), Envirosphere, and DOE's Commercial Radioactive Waste Management Program (Coates et al. 1986:21). These systems have generally been designed to assist senior program or project managers. Principal objectives of such systems include the identification of issues that affect the corporation, development and review of strategic plans, and resolution of issues that are of particular pertinence to the corporation. Issue management systems have also been used to improve communications with the media and the public. Recent trends indicate that computerized issue management systems are becoming increasingly common as commercial software programs reduce the need for internal program development, and powerful microcomputers become standard business management tools. Recently, some organizations have developed issue identification, tracking, and analyses systems that are broad-based and are disseminated as subscription newsletters for use as input to more specific, internal issue management systems (Coates et al. 1986).

This paper describes the Transportation issue management system (TIMS) that has been applied to the U.S. Department of Energy's (DOE) nuclear waste transportation program.

ISSUE MANAGEMENT SYSTEMS--WHAT THEY ARE

Issue management "is the orchestrating of a positive plan for dealing with issues, rather than merely reacting to them. It is a tool...to come to an earlier and more constructive understanding of the issues an organization or industry will face in the next few years" (Coates et al 1986:2).

A decision to implement and maintain an issue management system frequently results from an organization's desire to be "out in front" of issues and to avoid the adverse consequences of reacting to--rather than shaping--issues and events that are important to their success or survival. An issue management system is valuable because it helps an organization's staff and managers interpret the implications of changing conditions on opportunities and options, therefore improving the organization's ability to formulate timely and effective responses. In generic terms, issue management systems are principally used for:

- Issue Identification
- Issue Analysis
- Issue Prioritization
- Development of Organizational Position/Strategic Options
- Action Planning and Implementation

As defined in this paper, an issue management system is a systematized procedure for obtaining, reviewing, summarizing, organizing, and analyzing information about pertinent issues. These systems frequently use computerized data base management programs. Issue management systems are typically designed to help organizations digest and manage large amounts of information. Issue management systems are based on some process for data reduction--typically the scanning and abstracting of documents--and data analysis and interpretation. Some also involve the collection of new information through techniques of opinion polling. An important element in developing an issue management system is defining the sources of information that will be scanned, and developing procedures for obtaining, scanning, and abstracting information from them. For many systems, the list of potential source documents is long and varied, including trade and scientific journals, newspapers and news magazines, records of regulatory and legislative actions, technical reports, meeting reports, newsletters and other material from interest groups, client groups, and the public. In these times of the information explosion, inadequate information is generally less of a problem to an organization than the sorting, reducing, and organizing of the volumes of data that are available and pertinent.

Typically, issue management systems have two types of users. The first are those actually working with the system and the computer--abstracting information from sources, entering information into the system, analyzing information in the system, and preparing reports and summary listings of system contents. The second are users of staff reports, issue briefs, and/or summary hard copy listings of system output. Because of the proprietary nature of *many* strategic planning activities, many systems rely on internal staff to identify trends and issues in the computerized output. This information is typically collected, reviewed, and analyzed by a small "core" staff whose task it is to identify trends and issues pertinent to the organization from this combined information. They may also be responsible for analyzing the importance of the issue to the organization and for formulating an issue brief--or a compilation of pertinent abstracts--to be circulated among key staff and senior management. Senior management is then usually responsible for assessing the relative importance of the issue, defining the options for addressing the issue if it is important, and finally selecting a plan of action. In other words, the issue management system is linked, directly or indirectly, to the planners and policy makers of the organization, and the computer is used as a tool for storing, sorting, compiling, and tabulating information in ways that facilitate issue identification and analysis by trained staff.

When developing an issue management system, it has been found critical to define the system's specific scope and objectives, establish a network of users, and place the system strategically in the organization. To be effective, issue management systems need a well-defined scope and clear objectives. The scope and objectives of an issue management system may be broad and sweeping (long-term corporate strategic planning, for example), or highly focused (implementation of a specific program or program component), but information abstracting and analysis cannot be effective if the level of detail is not well defined.

THE TRANSPORTATION ISSUE MANAGEMENT SYSTEM (TIMS)

DOE's Office of Civilian Radioactive Waste Management (OCRWM) is developing an issue management system for the high level waste transportation program. This system, the Transportation Issue Management System (TIMS), is a relational database designed to assist OCRWM in identifying institutional issues related to nuclear waste transportation, analyzing these issues, and resolving them in a manner that is responsive to the legislated responsibilities of DOE and the interests of the affected parties.

An issue management system is particularly well-suited to this type of program. The repository project has a very long duration, continuing through the turn of the century. Because of this long time frame, some mechanism is needed to maintain an institutional memory of the issues and program responses over a period of several years. This allows progress on the resolution of issues to be tracked and serves as a useful source of information about previous actions and accomplishments when new people are brought into the program. Staff turnover is inevitable in a long-term project, and such a system can be effective in smoothing the transition when knowledgeable staff leave.

The OCRWM program operates in a complex regulatory environment that includes other federal agencies as well as state, local, and tribal governments. In order to accomplish the objectives of the Transportation Program, there is a need to work with other federal and state agencies, as well as Tribes, local governments, regional organizations, interest groups, industry, utilities, and citizens interested in the transportation program and its associated issues. The number of actors and amount of information related to the program are substantial. Thus, a tool to collect, condense, and organize relevant data, better define key issues and players, and facilitate issue resolution is needed.

TIMS' design is influenced by its principal objective: supporting the resolution of key transportation institutional issues. This requires identification and analysis of conflicts among organizations about their jurisdiction, responsibility, and interests on issues of importance to the Transportation Program. Consequently, the system is designed to compile information about what organizations have jurisdiction, responsibility, or

interest in which issues, and what are they saying or doing that clarifies, establishes, or implements that jurisdiction, responsibility, or interest.

TIMS is designed to provide focused, succinct summaries of key issues, significant events, and pertinent documents that can be targeted to specific topics and issues. The central purpose of TIMS is to summarize and organize information about issues, organizations, and events by abstracting appropriate documents. TIMS will contain pertinent information from DOE technical reports, other federal documents, correspondence, professional journals, popular literature, newspapers, legislation, and testimony.

TIMS STRUCTURE

TIMS is a relational database management system that uses the dBASE III Plus software. TIMS is primarily menu driven, with an option for use of dBASE functions.

The structure of TIMS is shown in Fig. 1. TIMS is composed of six files: (1) the source file, which contains bibliographic information about the documents abstracted for the system; (2) the organization file, which contains information about the organizations involved in the transportation program; (3) the issue file, which provides a structure for the information abstracted from these documents; (4) the statement file, which contains the abstracted information linked to a particular source, organization, and issue, as well as a list of keywords; (5) the events file, which provides a chronology of events pertinent to the key issues; and (6) the resolution file, which summarizes the current progress made toward resolution of each issue. These six files contain information needed to analyze DOE's progress toward the resolution of key transportation issues and to provide information about those issues that would assist in the resolution process.

Information in the six files can be listed, sorted, and cross-referenced. Various reporting options are available to prepare hard copy output. A keyword system has been incorporated in TIMS to facilitate information retrieval.

Each of the six files in TIMS contains information pertinent to the analysis and resolution of issues related to the transportation of high-level waste to a permanent geologic repository. Use of a relational database system allows TIMS to structure information in an efficient, logical format within the separate files while retaining the ability to sort and link information from multiple files. Each of the six TIMS files is briefly described in the following sections.

The Source File. The source file contains information about the source documents that have been selected to be abstracted and entered into the TIMS system. All the information necessary to prepare a complete bibliographic citation is contained in the source file. In addition, the source file includes a note field where an abstract of the document and comments by staff about the document can be entered, if such information about the source is useful. The source file is organized into source categories to facilitate retrieval and analysis. In TIMS, the source categories are each assigned an alphabetical letter. Each entry in the source file is placed within one of these categories and is assigned a number by TIMS. When displayed in TIMS, the

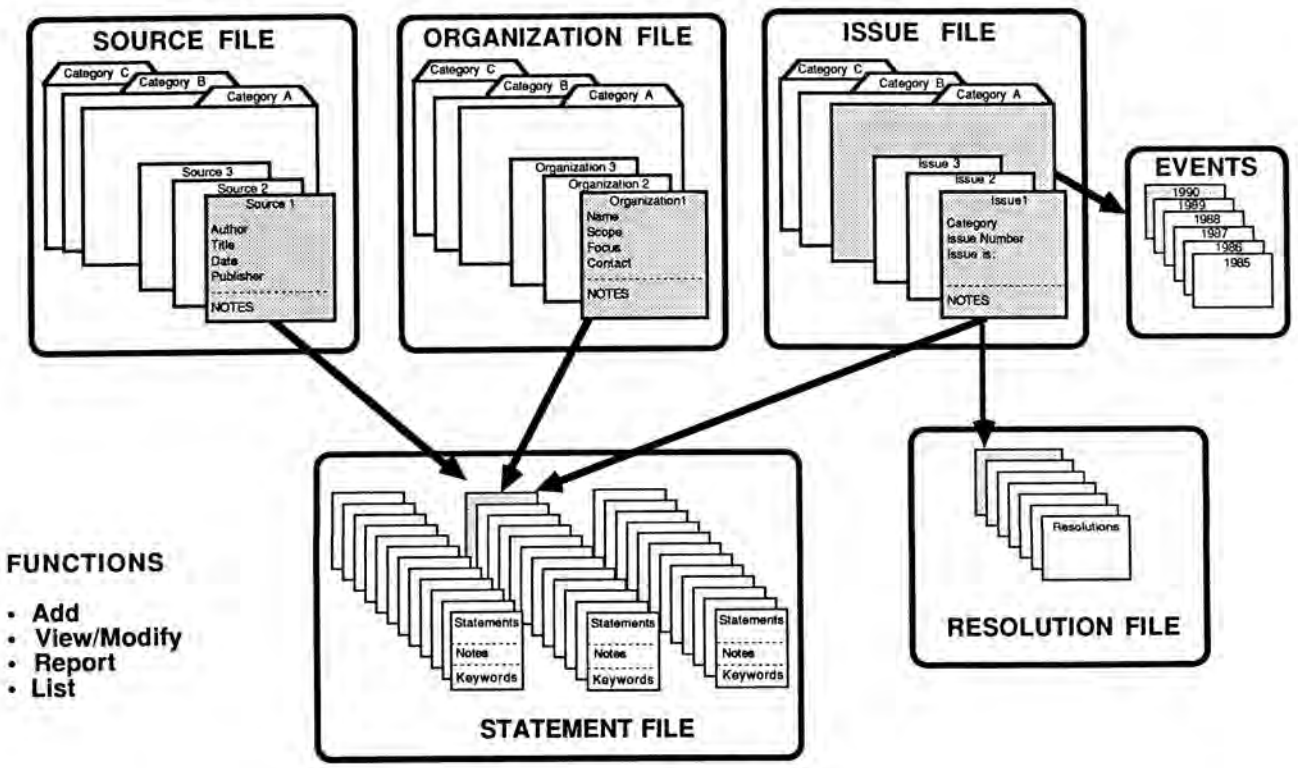

Fig. 1. The Structure of TIMS

identification number for each source includes the letter of the source category and the source number.

One of the important design tasks for TIMS was to determine the source documents that would be abstracted and entered into the system. To give the system analytic integrity, it is important that (1) pertinent sources are included; and (2) users can easily determine what documents have been abstracted into the system. To facilitate analysis, sources have been organized into the following categories: DOE Program documents and testimony; OCRWM Official (and Prepared) Policy Statements; OCRWM DOE-HQ Correspondence; OCRWM Workshop Reports; OCRWM DOE-CH Correspondence; Other Federal Documents; State/Tribal/Local Documents and Correspondence; Legal and Legislative Materials; Interest Group and Professional Literature; Newsclippings/Mass Media; Popular Literature/Books; and Public Comments, Correspondence, Testimony. A preliminary list of sources from each category that will be included in the system has been developed and will be abstracted in an order determined by DOE and the program staff.

The system is designed to provide ready access to hard copies of materials referenced in TIMS so that the complete text can be examined, if necessary, in the preparation of issue analyses and briefs. The documents compiled for TIMS are not intended to serve as a general library for the program, however, and there is no intention of distributing either the bibliography or the documents outside the immediate TIMS project.

The Organization File. The organization file contains information about the organizations that have been or are expected to be involved in the implementation of the Transportation Institutional Plan. The organizations are also organized into categories to facilitate analysis. Examples of the organizational categories are Federal Agencies; Congress, the Judiciary, and the Executive Offices; State Governments and Associations; Local Governments and Associations; and Indian Tribes and Associations. The organization file contains information about the organization, such as its headquarters location; the scope of topics or issues addressed by or under the jurisdiction of the organization; the role or nature of the organization's activities related to the repository program; its geographic focus (international, national, regional, local); and the name of a contact person. In addition, the organization file has a note field where additional pertinent information about the organization can be entered--for example, the size and type of membership, the organization's role in the transportation network, and citation of the source of information about the organization.

The Issue File. The issue file provides a major aspect of the structure of TIMS. Issue categories have been identified that correspond to the key issues addressed in the Transportation Institutional Plan and to key issues identified by reviewing non-program documents. Within these issue categories, individual issues have been identified that (1) reflect the structure of the issue category as revealed by review of pertinent documents; (2) reflect the information needed by DOE and its contractors to analyze and resolve key transportation issues; and (3) provide a structure for the abstraction of data from source documents. The issue file contains the summary title of the issue category, the issue number, and the summary title of the issue. It also has a note field in which "running" summaries of the contents of the system and other comments pertinent to that issue can be entered.

The key issues that provide the backbone of the TIMS structure include

- General Routing Issues and Modal Mix
- Highway Routing
- Rail Routing
- Barge Routing
- Shipment Notification
- Emergency Preparedness and Response
- Physical Protection
- Training Standards
- Inspection and Enforcement
- Liability Coverage
- Cask Design and Testing
- Overweight Trucks
- Rail Service Analysis
- Operations
- Infrastructure Improvements
- Transportation of Defense Waste
- (Other) State, Tribal, and Local Regulations
- Program Design
- Transportation Accidents/Incidents.

As with other structural elements of TIMS, the issue categories and issues can be modified over time to reflect the emergence, merging, or disappearance of issues.

The Statement File. The statement file of TIMS contains the information abstracted from the source documents. Each statement entered into TIMS is derived from a source document, whose bibliographic information is entered into the source file as a source entry. As the document is abstracted into statements, the abstractor determines what issues are being addressed and which organizations are being referenced, and assigns the appropriate source number, organization number, and issue number to each statement. Each statement is thus linked to a specific source, organization, and issue. As the statements are entered into TIMS, they are assigned a unique statement number by TIMS. As shown in Figure 1-1, statements are not organized according to categories within the statement file; however, each statement is structurally linked to the specific source, organization, and issue to which it has been assigned and to the source, organization, and issue categories to which these specific sources, organizations, and issues belong.

The Events File. The events file contains information about events related to particular issue categories organized into year-by-year chronologies. Since the items contained in an events file are not linked directly to specific sources, organizations, or statements, the events file is structurally linked only to issue categories. The events entry screen shows the entry identification number, the summary title of the issue category, the year of the events, the date on which the entry was last updated, and brief comments about the events recorded in the entry. An attached note field contains the chronological listing of the events themselves.

The Resolution File. The resolution file is designed to track progress toward the resolution of issues. The resolution file is linked to the issues file. The identification number of an entry in the resolution file is the same as the identification number of the issue to which it is linked, and is therefore composed of a letter and a number. The screen for a resolution entry shows the resolution identification number, the summary titles of the issue category and the issue to which it corresponds, a summary of the current status of issue resolution, and the date the entry was last updated. A note field is available for more extensive information on the resolution status of this issue. It is anticipated

that information for the resolution file will be obtained both from review of information contained in the TIMS statement file and from discussions with program staff actively involved in those issues.

USES OF THE TIMS IN THE TRANSPORTATION PROGRAM

TIMS has been designed as an analytic tool to support the DOE Transportation Program. Information entered into the system can be retrieved and viewed on the computer screen or in hard copy output. Entries in the system can be sorted by multiple categories to facilitate compilation of appropriate material. For example, the system can display all statements that are abstracted from a particular category of source documents, associated with a particular category of issues, and containing a particular keyword. The system can provide counts of entries meeting specific search criteria or full text. It is anticipated that the system will be used to support the preparation of issue briefs, provide bibliographic references and chronologies of events associated with the various issue categories, and aid program planning.

SUMMARY

As recommended by Coates et al. (1986), TIMS is being developed incrementally, with attention to the need to tailor the system to the specific needs of the users and to establish an effective network between system operators and system users. This is an ongoing process. Because the program TIMS is designed to support is focused on the identification and resolution of institutional issues related to the transportation of radioactive waste, TIMS has a narrower scope and more specific objective than some of the issues management systems designed to support more "futures-oriented" strategic planning. For this reason, TIMS has been designed principally as an analytic, internal tool that emphasizes the relationship between organizations and issues.

TIMS is now being developed as a prototype system. During FY 1987, the emphasis is on adjusting the TIMS category structures, abstracting and entering important source documents, and refining the analytic procedures and presentation of system results. At the end of this year, TIMS will be evaluated to determine whether it is an effective method for providing support to the transportation institutional plan.

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