

AUTOMATION THROUGH THE PIP CONCURRENCE SYSTEM IMPROVES INFORMATION SHARING AMONG DOE MANAGERS

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ABSTRACT

The Program Implementation Plan (PIP) Concurrence System is designed to improve information sharing within the U.S. Department of Energy (DOE) and between DOE and the Field. Effectively sharing information enables DOE managers to make more informed, effective decisions. The PIP Concurrence System improved information sharing among DOE managers by defining the automated process for concurring on a DOE document, thus reducing the time required to concur on the document by 75%. The first step in defining an automated process is to structure the process for concurring on a document. Only those DOE managers with approved access could review certain parts of a document on a concurrence system. Remember that the concurrence process is a sign off procedure unlike a commentary process in which comments may not be restricted to certain people. The commentary process is the beginning of the concurrence process. The commentary process builds a document; the concurrence process approves it.

INTRODUCTION

DOE managers use information to make decisions setting policy and strategy. They must make these decisions based on intermediate information--unorganized and informal information that is not always complete. There are two principle reasons for this. First, it's sometimes difficult for DOE managers, with different preferences, to agree on the information's content. Decisions are then made based on incomplete information since managers have not reached consensus on what's needed. Second, because of the lengthy concurrence chain, decisions must often be made before information can pass through a time-consuming approval process. In both cases, improved management of intermediate information through automation can lead to more effective information sharing which leads to more effective decision making. This is because automation 1) adds meaningful structure to otherwise, informal information, 2) directs the flow of intermediate information to the appropriate DOE manager for review and approval, and 3) reduces the time involved in concurrence activities.

The PIP Concurrence System automated the process required to concur on and produce a DOE planning document--the Office of Defense Waste and Transportation Management (DWTM) Program Implementation Plan (PIP). The PIP had to be concurred on by various DOE managers at the Field and Headquarters (HQ) level.

The 1987 PIP was created, reviewed, and concurred on through the use of time-consuming communications tools (mail, phone, facsimile, etc.) without a defined concurrence process. Structuring and defining the automated concurrence process dramatically reduced the time and overhead required for the concurrence process on the 1988 PIP. However, lessons can be learned from the PIP Concurrence System which can be applied to other documents requiring

concurrence. The PIP Concurrence System can be accessed through the Waste Information Network (WIN) System.

THE PROGRAM IMPLEMENTATION PLAN

To understand how the PIP Concurrence System was developed, I must first begin with an explanation of the design and content of the PIP document itself.

The PIP document described the current DOE approach for managing defense high-level waste (HLW), transuranic (TRU) waste, and low-level waste (LLW) from atomic energy activities. There were four main sections of the PIP document. The first section was an Executive Summary which gave an overview of the status and management of the three types of defense radioactive waste--HLW, TRU waste, and LLW. The next three sections described in greater detail the status and management of each type of waste. Section two concentrated on HLW. This section was divided into three sections--the three sites that contain HLW--Savannah River Site (SRS), Idaho National Engineering Laboratory (INEL), and Hanford. Section three concentrated on TRU waste and it too was divided up by the six sites that contain TRU waste--SRS, INEL, Hanford, Los Alamos National Laboratory (LANL), Oak Ridge (OR), and Nevada Test Site (NTS). Likewise, section four discussed LLW and was divided up by the six sites that contain LLW. In Fig. 1, I show the major active storage/disposal sites for defense radioactive waste (1).

THE PIP CONCURRENCE SYSTEM

The first step in determining the design of a concurrence system is to structure and flow chart the concurrence process itself. Each subsection of the PIP document was transformed into a file that would eventually reside in the system. I defined a subsection as the largest continuous section of the PIP document having the same concurrence chain. For example, the SRS paragraph under the HLW

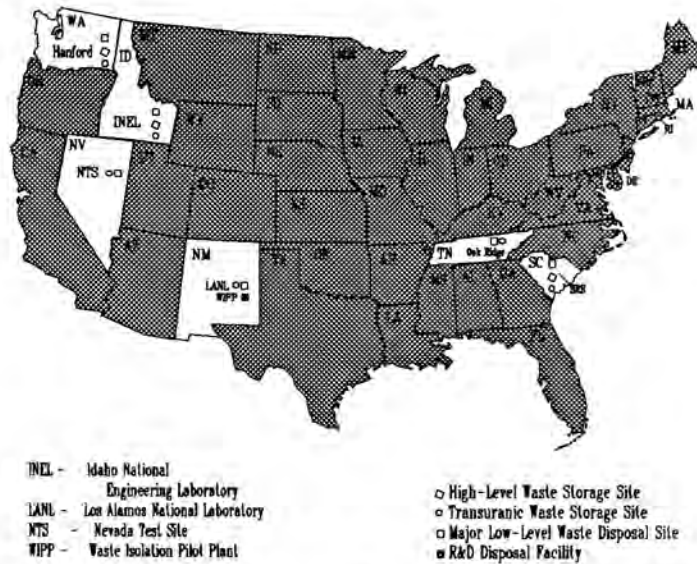


Fig. 1. These are the major active storage/disposal sites for defense radioactive waste.

section of the document would be considered one file. Dividing the document up in that manner resulted in a total of 72 files.

Next, I flow charted the concurrence process each file should go through. Most files began at the Field Site (FS) level. The files were typically a copy of Last Year's PIP (Version 1 in Fig. 2). At that level, they were created or edited (if edited, Version 1 from last year's PIP became Version 2) and sent to a FS DOE manager for review and concurrence. If they were concurred on at the FS level, they

were sent to the next level of concurrence for review. This next level of review depended on the waste type. Let's use a SR HLW file, as an example. Since the file discussed the status and management of HLW at the SRS, it would be sent to the HLW Lead Site (LS) for review once it was concurred on at the FS level. If it was concurred on at the LS level, it was sent on to the appropriate managers at DOE-HQ for final review. If at any time during the concurrence process, a manager did not concur on the file, it was then 'sent back' for further edits (thus creating more Versions) and routed through the concurrence chain again until final approval or concurrence. Fig. 2 shows the path a file takes when it is 'sent back' for further edits during the review or concurrence process (2).

Once the concurrence process was plotted for a file, the file was assigned editors and reviewers to carry it through

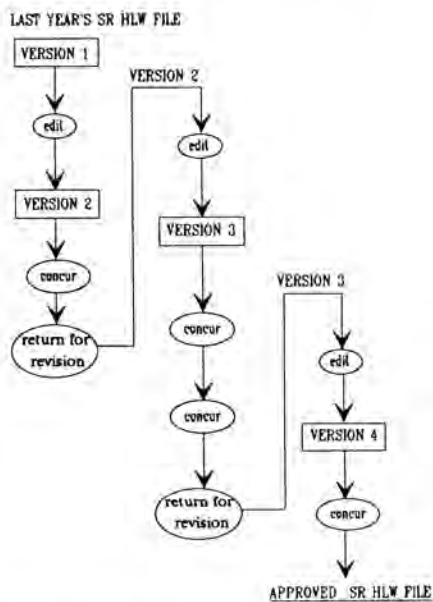


Fig. 2. When a PIP file is "sent back" for further edits, different versions of the PIP file are created.

Filename: SRHLW

USERID	LEVEL	ACCESS
USER 1	FS	EDIT
USER 2	FS	CONCUR
USER 3	LS	EDIT
USER 4	LS	CONCUR
USER 5	HQ	EDIT
USER 6	HQ	FULL

Fig. 3. This is an example of how a PIP file is assigned users.

the concurrence chain (2). Figure 3 shows an example of how a PIP file was assigned users (3). To briefly recap, each PIP file starts out as a new version (Version 1), typically a copy of something from last year's PIP. Each PIP file is first edited by someone at the HQ, LS, or FS level. When editing is complete, each editor submits his file(s) (Version 2) to preestablished users for review or concurrence. The most direct path a file can take is when all concurrence people approve the file. Fig. 4 shows an example of this direct concurrence path (2).

The primary feature of the PIP Concurrence System was to track the progress of files through the editing/concurrence process and provide file access/control. A user transferred his file from the PIP Concurrence System to the word processor of his choice. Thus, the user could edit the file using his own word processing package that he was familiar with. When finished editing the file, the user transferred it back on to the PIP Concurrence System (2). Fig. 5 shows this process of editing a file (3). Although a file could not be edited directly from the PIP Concurrence System, a reviewer could read or print the file while in the PIP Concurrence System (2).

As mentioned earlier, the PIP Concurrence System tracked the progress of files through the editing/concurrence process. At any given time, a DOE manager could access a status board to determine how well the concurrence process was progressing. This feature helped the DOE manager identify files that were delayed in the concurrence process and who to call to determine the cause of the delay. Once a file had completed the entire concurrence process, its status read, "Concurred on and available for copy" meaning any user with access to the PIP Concurrence System could read the approved file or print it. This feature

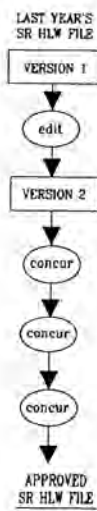


Fig. 4. The more direct path a PIP file can take is when all concurrence people approve the PIP file.

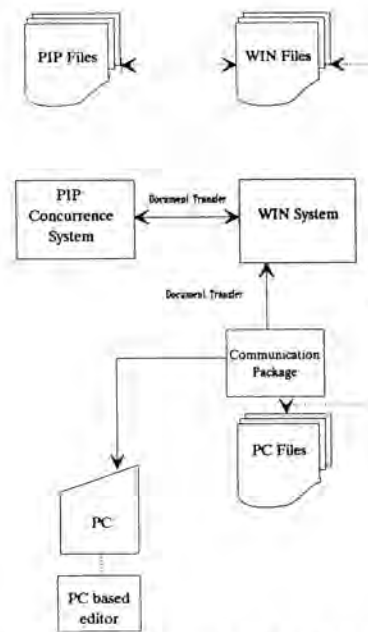


Fig. 5. A user can edit his PIP file using his own work processing package.

proved valuable to users who needed the most current status of a particular program discussed in the file. Fig. 6 shows the PIP Concurrence System Status Board (2). The PIP Concurrence System DataBase Administrator (DBA) function was developed to monitor and facilitate the progress of files through the PIP Concurrence System. The DBA was a designated user who was given access to the PIP Concurrence System DBA function. Through a series of screens and commands the DBA was able to add, delete, and restore files (restore meant to recover files that were accidentally deleted by a user); change the edit/concurrence chain for any file if needed; review the current status of all files; and inform users of important events or upcoming deadlines in reference to concurrence through a message board. Fig. 7 shows an example of the PIP Concurrence System Message Board (4).

Training a user on the PIP Concurrence System involved educating them on the concurrence process itself so each user knew his role.

During the first year the PIP Concurrence System was used to produce the PIP document, the time required to concur on the document was reduced by 75%. This is a result of a number of factors, one of them being that the development of the PIP Concurrence System clearly defined and implemented the concurrence process and maintained concurrency control. Bernstein and Goodman (1981) define concurrency control as "the activity of coordinating concurrent access to a data base in a multiuser distributed DBMS. Concurrency control permits users to access a database in a multiprogrammed fashion while preserving the illusion that each user is executing alone on a

PIP CONCURRENCE SYSTEM STATUS
8 Items Listed

This is the current status of all PIP files. You can copy any concurred-upon file to your WIN userid for downloading and printing. Example: CP 7 <RETURN>; CP ALL <RETURN>.

CHOICE	FILENAME	LEVEL	STATUS	DATE
1	HQLLI	FS	Submitted for concurrence to USER3	02/15/88
2	HQXSUM	FS	Sent back to USER2 for more editing	02/15/88
3	ALLLP	FS	Last year's PIP	06/01/88
4	IDLLT	FS	Given to USER1 for editing	02/20/88
5	NVLLP	FS	Last year's PIP	06/01/88
6	ORTRP	FS	Concurred on; available for copy to WIN ID	03/15/88
7	RLHLP	FS	Last year's PIP	06/01/88
8	SRLLP	FS	Last year's PIP	06/01/88

SR - Sort by date/filename	CP # - Copy file "#" to WIN Userid
P - Help with STATUS	D # - Display concurrence list for file #
H - Help with STATUS	N - Next page of files
	Q - Quit; return to PIP-CS MAIN MENU

Enter your choice:

Fig. 6. The PIP Concurrence System Status Board displays the current status of each PIP file.

PIP CONCURRENCE SYSTEM
MAIN MENU

PIP-CS FUNCTIONS	NEEDING ACTION	FUNCTION DEFINITIONS
G	1	Get these file(s) to edit for next year's PIP.
S	0	Submit these file(s) for concurrence when edit is complete.
C	1	Concur on these file(s) or send back for further editing.
ST		Check status of PIP-CS files.
H		PIP-CS HELP MENU for PIP-CS functions and processes.
W		Return to WIN Applications.

.....

*This is the PIP-CS Message Board. It displays current, global messages from HQ *
concerning the PIP development process.

.....

'Enter' means to type the desired command and press <RETURN>.

Enter your choice of PIP functions.

Fig. 7. The PIP Concurrence System Message Board displays messages from HQ concerning the PIP development process.

dedicated system. The main technical difficulty in attaining this goal is to prevent database updates performed by one user from interfering with database retrievals and updates performed by another (5)." The PIP Concurrence System demonstrated successful concurrence control. Only those DOE managers who needed to edit or review a file were given access to it, thus eliminating unsolicited comments and review delays. In addition, as a file was being edited, the system prevented the other file's editors access to it to eliminate the possibility of conflicting versions residing on the PIP Concurrence System, thus ensuring data integrity.

Effectively sharing information is central to DOE's day-to-day operation. The PIP Concurrence System met its main objective which was to improve information sharing within DOE. To formulate and execute plans, then to oversee their implementation, requires sharing data, informa-

tion, tools, and decision mechanisms--and sharing them not only between and among offices at one central location, but also between that location and numerous off-site field offices and contractor offices. Since every function a DOE manager performs involves some kind of sharing, it is imperative that he or she have the clearest possible knowledge about every piece of data and the information being dealt with (6).

Thus, the PIP Concurrence System was and is vital to effectively sharing information. Automation forced me to define the components of the PIP document and its concurrence process. As stated earlier, automation improved information sharing among DOE managers because it provided three important features. First, the PIP Concurrence System added meaningful structure to otherwise, informal information. The intermediate data became part of

a concurrence chain so a user always knew who had last seen the information (a file) and who would see it next. Knowledge of who the other reviewers were and when they would review a file in the concurrence process helped the user decide what his or her comments should be. Second, the system directed the flow of intermediate information. Each file had its access restricted by the defined concurrence chain. Thus, only those DOE managers with approved access could provide comment on a file. This restricted access could be viewed as a problem since it may preclude knowledgeable comments by excluding someone in the concurrence chain. However, the benefits from structuring a concurrence chain outweigh the risks since some documents require concurrence (sign off) in addition to a comment period. Lastly, the PIP Concurrence System reduced time involved in concurrence activities because the concurrence process was structured and resided on an electronic system.

The PIP Concurrence System enabled a DOE manager to have access to the most recent data right at his desk. Due to PIP concurrence control mechanisms, this data was not only current, but retained its integrity and reliability. The PIP Concurrence System, as a means to share data and information, was and still is an effective tool and mechanism by which to make more informed decisions to produce useful planning documents. The PIP Concurrence System can be modified to include other DOE documents requiring concurrence.

ACKNOWLEDGEMENTS

The ideas presented in this paper represent cumulative work of hundreds of people over twelve years at Virginia Tech's Management Systems Laboratories. Professional managers from business and industry, and faculty, graduate students, and undergraduates from a wide variety of engineering and other disciplines have participated in the research and development of these tools and techniques. The author thanks them for their good work. The pronoun "I" is used throughout to separate all of us using management systems (we) from the author (I). However, please recognize "I" is more than one contributor to this work.

The preparation of this paper is funded by U.S. Department of Energy (DOE) Grant No. DE-FG0288DP48058. Management Systems Laboratories thanks DOE's former

Office of Defense Waste and Transportation Management and DOE's Office of Environmental Restoration and Waste Management for providing us a real-world laboratory for the research, development, and testing of state-of-the-art management tools and the frameworks for understanding how to make them successful.

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