# The Automated Office — Example: Producing a Newsletter

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#### INTRODUCTION

The day of manual typing and filing of original letters, memos, and other short documents is coming to a close. The day of automated typing and filing will take its place.

Everyone knows that. The so-called "office of the future" has been the subject of countless articles, seminars, and sales presentations. Manufacturers such as Xerox, Savin, and Wang are busy producing and selling what they call "executive work stations."

These trends reflect the desires of managerial, professional, and executive personnel to join the data processing revolution. Most likely, this is the next step in the evolution of the office of the future.

This paper examines these trends in light of our experience with creating an "automated office" — providing computer capabilities to our professional, managerial, and executive staff. In brief, we found we:

- Reduced or eliminated paperwork and filing
- Used our resources more efficiently
- Saved on personnel costs
- Increased productivity.

The how and why of these findings will be presented in the following pages. An example of the way the automated office works is provided through a discussion of our method for producing a newsletter with the assistance of our computer. A discussion also is included of how this method is applied to produce some of our user documentation.

This paper is organized into the following seven sections:

- Background Information. This section provides background information on the Criminal Justice Information Systems Division.
- *Hardware Configuration*. This section briefly describes the hardware configuration in operation at the CJIS office.
- File Group and Account Structures. This section describes the file group and account structure in use on the CJIS HP3000.
- Organization of the Automated Office. This sec-

tion describes the way the CJIS office became automated, the way it operates, and the way it should operate in the future.

- Producing a Newsletter. This section presents the example of the automated office in producing a newsletter with the assistance of the HP3000. Design tips are included.
- Producing User Documentation. This section describes how the method used to produce the newsletter can be used also to produce user documentation.
- Conclusions and Observations. This section presents some observations and conclusions about the automated office in general, based on our specific experience with it.

For the purposes of this paper, original text is defined as the document produced as a result of a person's desire to turn thoughts into written words.

#### I. BACKGROUND INFORMATION

The Criminal Justice Information Systems Division (CJIS) of the Illinois Law Enforcement Commission functions as a computer consulting agency for other state and local Illinois criminal justice agencies.

CJIS also maintains a Statistical Analysis Center that develops statistical analysis methodologies and applies those methodologies to data collected by the software systems we design, as well as to data from other sources, such as the Uniform Crime Reports.

CJIS staff provide technical assistance to criminal justice agencies interested in acquiring data processing services and equipment. CJIS also designs, develops, and implements transaction-driven, real-time management information systems for state and local criminal justice agencies.

Recently CJIS developed and implemented an electronic transfer of inmate data between the Cook County Department of Corrections and the Illinois Department of Corrections. Both agencies use CJIS's Correctional Institution Management Information System (CIMIS) to collect and maintain their inmate data. The electronic transfer is timed to coincide with the weekly transfer of

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inmates from the Cook County Jail to the Joliet Correctional Center. The inmates' records arrive before they do.

Other systems currently under development include one for the Cook County State's Attorney's Office, one for the Police Training Board, one for the Illinois Attorney General, one for small and medium-sized Illinois police departments, and one to monitor the activities of juvenile detention centers throughout the state.

CJIS's 45 employees include 20 technical people, nine professionals, eight managers, and eight clerical staff.

### **II. HARDWARE CONFIGURATION**

CJIS hardware configuration is represented by Figure 1. We operate two HP3000 Series IIIs, one for system development and back-up, and the other for system production.

Our in-house computer functions are handled by the development computer. Our on-line users are handled by the production computer.

Our office hardware configuration is centered around the development computer. We use about 35 CRT terminals for input operations, software testing, and system demonstrations. About 30 operate under MPE. The remainder are block-mode terminals used to test or demonstrate the systems we develop.

Of the 30 MPE terminals, about half are used by programmers and analysts; the other half by managers and professionals.

We have an optical-character-recognition scanner, but find it more efficient to type original text directly onto the computer using a CRT terminal.

For output we have two HP upper-case drum line printers, an upper and lower case dot-matrix Printronix line printer, two Agile 4210 letter-quality daisywheel printer/terminals, two Xerox daisywheel word processors with local storage and reformatting capabilities, and a Versatec 1200A electrostatic printer/plotter. Figure 2 illustrates this configuration. Documents input on any one of the 30 or so CRTs can be output on any one of these output devices.

A person typing a letter or other document has the option to direct it to a line printer, to tell a word processor operator to print it out, or to use one of the AGILE printer-terminals to print it out himself.

As you can see from Figure 1, our HPs are connected to all sorts of other computers. This brings up an interesting sidelight to the discussion on the automated office — the transmission and reception of text and documents across communication lines. Already certain of our staff send and receive messages to and from Springfield, Washington, D.C., the Cook County Jail and the Illinois Department of Corrections.

Soon managers and professionals will enjoy the benefits of this kind of communication technology. Today's electronic mail and electronic database systems are only a small indication of the sort of assistance to come.

#### **III. GROUP AND ACCOUNT STRUCTURE**

Our group and account structures make allowances for text and document processing.

Most of the accounts on the HP are set up according to the software systems under development. The programmers and analysts working on the Police Information Management System (PIMS), for example, log on the PIMS account. The Attorney General's system people log on the AG account. And so on.

Each of these accounts includes a group specifically set aside for documentation and text files, usually called "DOCUMENT."

Managers and professionals unconnected with any one particular software system log on a generic "CJIS" account. Within this account are two groups set aside for text files — one for software documentation, and one for short documents such as letters, memos, and reports. The word processor operators log on this group, the "DOCUMENT.CJIS" group.

****	***************************************	* * * *
*		*
*		*
*		*
*	EXAMPLE 1	*
*		*
*		*
*	Word processor operators sign on:	*
*		*
*	HELLO <name>/<password>.CJIS</password></name>	*
*	-	*
*	and are automatically placed in the DOCUMENT group.	*
*	Managers and professionals are provided with similar	*
*	log on procedures.	*
*		*
*		*



Figure 2. A person creating a letter, memo or other document has the option to direct it to a line printer, to tell a word processor operator to print it out, or to use the Agile printer/terminal to print it out himself. The plotter is used to produce charts and graphs.

This structure simplifies filing and recall of documents by segregating text files into separate groups within the various accounts. Furthermore, it provides a separate group within the "administrative" account specifically for short documents such as letters, memos, and brief reports.

This provides ease of permanent storage on magnetic tape. The whole group of files can be stored at once each month to provide a permanent record, if desired. We generally rely on twice-weekly system dumps and daily date dumps to provide back-up.

So far, this account structure is the only formal method of organizing and maintaining text files we use. Each office user is responsible for preserving, naming, and maintaining his or her own files within these groups, and is responsible for ordering separate magnetic tape storage, if any. Generally speaking, the system storage and dump procedures are reliable enough so that these back-up and permanent filing procedures aren't used very often.

In the future some sort of additional text file structuring according to function may be implemented to keep on file letters, memos, and reports of interest to future employees, or that provide historical reference.

As of today, the account structure allows the personnel to use the text files to supplant and supplement their own personal files, and to facilitate and direct document flow between personnel inside and outside the office.

### IV. ORGANIZATION OF THE AUTOMATED OFFICE

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During the past three years, our programming and analyst staff tripled. Our statistical staff doubled. Our clerical staff did not increase.

Yet we are getting more done, more quickly, and more efficiently. We are using the computer to eliminate wasteful and redundant paperwork and filing procedures. Part of the reason CJIS professionals and managers use the computer is because our boss, CJIS Director J. David Coldren, uses one in his office. We were provided with a top-level example of how it could help.

When office workers find out how the using the computer can help them with their jobs, they ask to have terminals installed in their offices. They notice for themselves how using the computer can help them get their work down faster and more efficiently.

This fact was brought home to us by the realization that we never seem to have enough terminals to go around, no matter how many we order. Someone else is always asking for one.

Now that we've recognized the trend, we're in the process of studying and evaluating it, and planning for the future.

The way it works is illustrated by the following:

An administative assistant finds he must handle and generate a great deal of paperwork to fullfill the functions of his job. Letters, memos, brief reports, budget statements, etc.

He has a CRT terminal on his desk, which he requested about a year ago when he realized how much the computer could help him with his work.

One of his tasks is to prepare and distribute monthly progress reports on all CJIS activities. He created a text file on the computer using the TDP/3000 text processing subsystem. He keeps this text on file, calling it up each month to change only those parts of the report that require updating. He has entered formatting commands once, and shouldn't have to enter them again.

Each month he enters the changes, stores the new file, and tells the word processor operator the name of the new file. She prints it out, makes copies, and distributes it.

He rarely asks for draft copies anymore, so confident is he of his abilities to correctly type in, proofread, and format the monthly report.

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*	To crea	te a text	file f	or a	memo	the	manager	types:	*
*									*
*									*
*	:RUN	TDP.PUB.SY	S						*
*			-						*
*	חח ג/								*
*	/								*
-	1	<b>b a a b</b>							
<u>.</u>	1	text	•						
*	2	• • •							*
*	3	• • •							*
*	4	etc	•						*
*									*

\* /KEEP MEMO, UNN \* /PRINT ALL, OFFLINE (to get a working copy) \* /MODIFY 1/4 . . . \* /KEEP \* /EXIT :RELEASE MEMO To modify a text file for a memo the manager types: :RUN TDP.PUB.SYS /TEXT MEMO /MODIFY 1/4 (etc.) /KEEP /EXIT :RELEASE MEMO The manager tells the word processor operator to print a file called "MEMO" on the standard memo form. She logs on and types: :RUN TDP.PUB.SYS /LISTQ MEMO /EXIT : BYE She stores the file on a floppy disk, and prints it out. \* TDP formatting commands would not be used in this case. If any reformatting were necessary, the word processor \* operator would do it on the word processor. 

When this administrative assistant replies to a letter of inquiry, he types his response into a text file, edits it, and stores it. He tells the word processor operator the name of the file, and instructs her to print it out on letterhead. She does so, addresses the envelope, and brings the letter to him for his signature. Again, rarely does he request a draft copy to check, except for the most delicate and important letters.

What's eliminated in terms of paperwork is the draft; what's eliminated in terms of filing is filing working copies of the monthly report.

--EXAMPLE 3--The manager also can go to one of the Agile printer/ terminals and print out the memo himself. He types:

:RUN TDP.PUB.SYS /SET TERM AGILE15 /FINAL FROM MEMO /EXIT To do this he would add the following TDP formatting commands to the beginning of his text file: **\LFT** 10 \RHT 75 **\TOP 12** \* BOTTOM 12 \* This prints standard 65-character margins in 10 pitch, \* leaving 1" on each side of the paper, and 2" margins at the top and bottom of the page. TDP provides automatic paragraph compaction and optional hyphenation. Options also are available to print in 12 + pitch or proportional space (using the Agile or the Xerox), \* force page feeds (\NEW), double-space, indent, underline, and specify headings and page numbers. And he has a final-quality copy of his text file in hand. He gives this to a secretary to photocopy and distribute. 

Another illustration comes from the Statistical Analysis Center. An analyst recently completed two lengthy reports based on information gathered from the Cook County CIMIS we designed.

He typed the reports onto computer text files, complete with tables. He used the interactive and batch statistical analysis programs to formulate his results, and used our interactive graphics program to produce graphs and charts to illustrate his findings.

He formatted the document himself using the EDIT2 subsystem. He printed out draft copies using EDIT2 on the Agile printer/ terminal. A word processor operator will print out the final copy, using the same text file and the same text-processing subsystem.

\* --EXAMPLE 4--\* To format the long file, to print drafts on the Agile and finals on the Xerox 860, the statistician preparing the report used the following EDIT2 commands: >>SET PAGESIZE=66 >>SET TOPSPACE=2,6 >>SET BOTTOMSPACE=2,6 >>SET HEADING=OFF >>SET FOOTING=CENTER, #PAGE This sets the pagesize to 66 lines, or 11 inches, sets the \* \* page numbers to print in the center, and leaves margins at \*

the top and bottom of each page of 1-1/2 inches (9 lines). EDIT2 leaves a blank line for the heading when it's turned "off," and uses one line to print the page number at the bottom of the page. These commands provide room for 48 lines of text on each page. Each time the statistician wishes to force output to the top \* of a new page, he enters: \* .NEW PAGE The ".NEWPAGE" command is executed through the PRINT command when output is produced. \* This will set up the file to print on the AGILE. EDIT2 is different than TDP in that some of the formatting commands \* are entered as workfile options, instead of entered into \* the text file. Some defaults, such as page size (60) also are different. \* To accept this formatted output on the Xerox 860's local storage floppy disks: (1.4 The margins are set to 10 and 75 (EDIT2 defaults) 0 ο Pagesize and pagelength are set to 66 to match 0 Pitch is set to 10 (computer default) \* The word processor operator logs on, accesses the EDIT2 \* file, and executes a PRINT command. The report is printed \* onto the floppy disk exactly the way the statistician wants \* it -- exactly the way the word processor will print it out. \*\*\*\*\*

These procedures were implemented using the EDIT2 and TDP subsystems developed by HP. We also use the QEDIT subsystem developed by Robelle Consulting. In the near future we hope to convert all text processing to HP's new TDP/3000. We've found it to be a more powerful, versatile subsystem. It'll also save CPU time and file space hogged by EDIT2.

In the future we plan to make more use of secretaries to input original documents and to make changes to existing ones, to use the Agiles for final output, to implement the sheet-feeder function on one of the Agiles to produce documents on letterhead, and to develop and implement formatting programs and use files that will automatically format and print various types of documents.

CJIS Director J. David Coldren recently developed and implemented a new SPOOLER for use with output files. The new SPOOLER allows files to be printed automatically on specific device types, such as line or character printers, and to programatically control the input and output of text files.

The new SPOOLER will allow us to take text input from any user, format it according to document type (such as letter, memo, or report), and automatically print it out.

The documentation specialist will design, establish, and implement standards for formatting and organizing documents, and write subroutines and use files to automatically produce those documents. A person would then enter the necessary text, and issue the command to print it.

A combination of the capabilities of the TDP subsystem and the Agile printer/terminals will allow us to produce documents with a minimum of formatting work and a maximum of standardization.

No operator would be necessary, other than regular computer room operators.

This is what we're working toward, and this is what the new text processors are increasingly allowing us to do.

\* \* \* \* \* --EXAMPLE 5--\* The Old Way The New Way \* 1. Write out by hand 1. Type into text file Get WP to type draft \* 2. 2. Get WP to print final \* 3. Proof & correct draft 4. \* Get WP to type corrections \* 5. **Proof** revision 6. Get WP to print final The New Way eliminates draft copies. \* \*\*\*\*\*\*\*

This saves the WP operator time, which she can spend printing other people's documents, and saves personnel costs because one WP operator can print out as many documents as two or three can type and print out. It takes the manager about the same amount of time to create an original document each way, and less for updates to periodically-issued documents which only need revision.

#### **V. PRODUCING A NEWSLETTER**

The computer is used to produce charts and graphs to illustrate articles from the Statistical Analysis Center, to gather, edit, and produce copy ready for the printer's camera, to produce review copies of the articles, and to keep the articles on file in case they're ever needed again. See Figure 3.

An interactive graphics package CJIS developed makes use of our Versatec electrostatic plotter to produce line, bar, and pie charts, shaded maps of the state of Illinois, and Hudson algorithm graphs. HP Versaplot and Fortran software are used.

Staff members are assigned to write articles about projects they work on when there's a new development such as a new release of software or a new report.

An editorial board was formed of the agency's supervisors and managers, who assign articles and approve final drafts for publication. Staff members are responsible for placing their articles in text files, and releasing those text files for access by the editor.

The editor edits them for style and grammar only, a much less time-consuming and complicated procedure than editing them for content as well, which he used to do before the procedure was computerized.

The authors' text files, residing in their home accounts and groups, are copied over into one big text file in the editor's home account and group for editing, formatting, and printing out.

The basic idea is the editor works on-line, as do the authors of the articles. The authors enter the articles they write into text files, print them out for review by their supervisors, and when approved, release them to the editor. The editor edits them on-line using TDP, and makes use of various output options to assist him.

He uses the line printer to produce drafts with line numbers for editing, the Agile to produce review drafts for approval, and the Xerox 860 to reformat the articles into 3''-wide justified columns of proportional space type for paste-up.

In addition, authors generate graphs and charts to illustrate their articles, or the editor generates them online using the Versatec.

\* \* \* \* \* \* --EXAMPLE 6--\* \* To gather and output a copy of the articles requires the \* following TDP commands: \* \* \*



Figure 3. Steps in producing a newsletter with the assistance of the computer. (1) The author assigned to write an article creates a text file and prints out a copy for the supervisor's approval. Rewriters are done with the assistance of a text-processing subsystem. (2) The editor copies the article into a larger text file with other articles, prints out a working copy with line numbers on the line printer and prints out a copy of the edited file for review by the editorial board. (3) The approved articles are copied onto a local file on the word processor, reformatted, and typeset into justified columns. (4) Charts and graphs produced by the plotter are added during paste-up as illustrations for some of the articles. Variations of the procedure can be used to produce user documentation and other office documents and reports.

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*
     :RUN TDP.PUB.SYS
    /TEXT ARTICLE1.GROUP.ACCOUNT
    /JOIN ARTICLE2.GROUP.ACCOUNT
*
     JOIN ARTICLE3.GROUP.ACCOUNT
     /JOIN . . . . . .
                       (etc.)
  To produce a copy with line numbers for editing, modify the
*
*
   file, and store it:
*
     /LIST ALL, OFFLINE
*
     /MODIFY . . . . (etc.)
*
     /MOVE . . . . (etc.)
     /REPLACE . . . .
                       (etc.)
     /KEEP EDITFILE, UNN
*
*
*
     /EXIT
  The editor then goes to one of the Agile printer/terminals
*
                                                                  *
   and prints out copies for review. He issues the following
   format commands (these can be typed in on-line or stored
   at the beginning of the file itself):
*
     \LFT 10
     \RHT 65
*
*
     \LINESPACE 2
*
     \PAGENO 1,CENTER
*
     \TOP 12
*
     \BOTTOM 12
     \COPIES 3
*
   This will print out three copies of the edited articles,
*
   with 55-character margins, double-spaced to provide plenty
*
   of room for notes and corrections. Two inches are left
at the top and bottom of each page. The default pagelength
*
*
   in TDP is 66. TDP automatically fills or compacts the text
   to fit within the specified margins. The pagenumbers will
   start with "1" at the bottom center of the page.
   Other commands allow the editor to do such things as affix
*
   a heading displaying the time and date of the print-out, or
*
   to indent or underline items of special importance. These
*
   commands can be found in the TDP manual, or produced on-line
*
   through TDP's "HELP" command.
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Articles reside in the home groups and accounts of the authors, in a file in the editor's home group and account, and on a floppy disk on the 860. If any question arises at any step in the procedure as to original wording, it can easily be resolved by printing out a copy of one of the files. If any file is accidentally lost or damaged, it can easily be replaced or recovered. The articles remain on file until purged by the authors, and until purged by the editor, generally about two months later. Any can be stored permanently on magnetic tape.

Furthermore, if the authors want to use their articles for other purposes, such as including them in a report or memo they're writing, they can use a text processing subsystem to copy their original files, modify them, or extract from them the sections they need.

If an article is rejected for one issue, it remains on file for the next one. September, 1981



Statistical Analysis Center 

Criminal Justice Information Systems

Illinois Law Enforcement Commission

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Index crime in Illinois up 3.3 percent in 1980; up 9 percent in U.S. by Larry Dykstra SAC Analyst

Index crime in Illinois increased by 3.3 percent between 1979 and 1980. Violent crime increased by 4.2 percent, while property crime increased by 2.2 percent.

In comparison, index crime in America increased by 9 percent. Violent crime increased by 11 percent, and property crime increased by slightly more than 9 percent.

These figures are taken from recently-released 1980 Illinois Uniform Crime Report (IUCR) data and 1980 nationwide figures released by the FBI.

(continued on next page)

Figure 4. Sample cover of our newsletter shows type set using our word processor and graph produced using our plotter, both of which are connected to our HP3000 Series III.

If multiple copies of proof copies or lay-out copies are required, they can be produced simultaneously.

While the articles are being reviewed, the lay-out

process can begin. Minor last-minute changes can be made on the word processor, and cut and pasted in. See Figure 4.

--EXAMPLE 7--To reformat and typeset the articles on the Xerox 860 word processor, the WP operator logs on, and types in: :RUN TDP.PUB.SYS \* \* /LISTQ EDITFILE \* /EXIT :BYE Now the text is on the floppy disk, unformatted except for the page breaks the word processor puts in automatically. To reformat the text into 3"-wide, justified, proportionalspace columns, the WP operator calls up the stored document, and changes its recordable format block options to the following: 46 (36 chars. = 3" PS)Margins: 10 Pitch: PS (Proportional Space) Justify: Х (on) KB/PW: Standard (from ASCII, used for comm.) The operator exercises the reformatting software options available on the 860 to effect the changes. She marks the options she wishes to reformat: o Margins Pitch 0 o Justify KB/PW (i.e., character set) 0 \* Page Lay-Out 0 \* 0 Page Labels (i.e., because of narrow columns) Entering these options initiates the interactive hyphenation routine. The WP operator hyphenates, stores the reformatted columns, and prints them out. The editor waxes the backs of \* them, cuts them out, and pastes them up. The above options can be used in varying combinations to produce columns of virtually any size, type in different pitches, or ragged-right text. 

In the future we'd like to increase the efficiency of the formatting commands, format the articles on the Agile, and eliminate the step of local storage and reformatting at the word processor (860). Eventually we'd like to format the articles for transmission to an on-line typesetting service, and figure out the entire lay-out in advance (how many pages, how long each article will be, what the sizes of the illustrations will be, etc.). Articles are automatically filed for the authors, and may be produced at will. Word processors are used as output devices rather than input/output devices, and more efficient use is made of resources. Producing copies for review and proofreading and editing is a process of exercising format options of the text processing subsystems.

\*\*\*\*\*\* \* \* \* \* \* --NEWSLETTER PRODUCTION TIPS--\* Choose a two- or three-column design or a combination. \* Figure out the width of your columns by figuring the size of your page minus margins. Work at 125 percent of original \* \* size and have the lay-out sheets reduced to 80 percent at \* the printer's. Size graphs, photographs, and drawings with a reduction wheel. Paste up on non-repro blue graph paper, using a \* waxer to supply the paste and a light table to line everything up. \* Use Letraset or Kroytype letters for headlines, Rapidographs \* and Chartpak tape for lines, and cut and paste by-lines, \* page numbers, and cutlines. 

## VI. PRODUCING USER DOCUMENTATION

Many of the same procedures and methods we use to produce the newsletter with the assistance of the computer we use also to produce some of our user documentation.

We use our letter-quality printers to prepare copy ready for the printer's camera. CRT screen forms are printed out by a special program that reads the various forms files and formats them for output on the Agile or the Xerox 860.

The programming, analyst, and managerial staff take

part in the production of documentation by doing the initial writing for the systems they work on.

The documentation specialist texts the files from the others' accounts and groups into his own, edits them, does any additional writing that may be required (such as introductions and glossaries), and formats them for printing out.

He makes the changes in the documents, and has a secretary with a terminal enter them into a text file. He checks the file, then has the secretary or word processor operator print it out.

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*
                           --EXAMPLE 8--
*
*
*
  To format and print our user documentation, we use the
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   following TDP commands, embedded at the beginning of and
*
   throughout the file where needed:
*
*
*
     (:RUN TDP.PUB.SYS)
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\* /FINAL FROM USERMAN \* \* **\LFT** 10 RHT 75 \* \* \PAGENO "A- 1", CENTER \* **\PAGENOLINE 60** \* **\BOTTOM 10** \* **\TOP 12** \* \HEAD "INTRODUCTION", RIGHT \* \HEADLINE 6 \* **\IMAGE** \* These commands result in 65-character output (6-1/2" wide), with a top margin of 12 lines (2 inches) and a bottom margin \* of 10 lines (1-2/3"). The heading will be printed flush \* \* right, and reads "INTRODUCTION." It will be printed on line \* 6, leaving an inch before the start of the text. The page \* numbers will start with A-1, and will appear at the bottom The "\IMAGE" center, 6 lines (1 inch) from the bottom. command causes text to be printed out exactly the way it was typed in. The default setting on TDP, "\FORMAT" compacts and compresses text. Our documentation follows a strict format, and the FORMAT setting can easily distort \* it. \* \* New pages are specified by "\NEW" commands imbedded in the \* text. \* New page numbers are specified by a \PAGENO "B- 1" command, for example. New headings are specified by a \HEAD "SECTION 1", RIGHT \* command, for example. TDP also provides a capability to automatically generate a table of contents. \*\*\*\*\*\*

In the old days one person did everything, much like the newsletter. The new system saves research and writing time, and increases the amount of documentation than can be produced in a given amount of time.

In the future we'd like to extract more information from the computer, through our automated system design methodology. We'd also like to do more piecing together of new documentation from old documentation, making such things as glossaries and introductions standard.

### VII. CONCLUSIONS AND OBSERVATIONS

The benefits of placing programmers on-line and allowing them to write code on-line are obvious and generally accepted. The benefits of placing managers, researchers, writers, and other office professionals on-line are just as obvious, but not as generally accepted.

The problem often comes up in this way: When con-

fronted with the question of how office paperwork is handled, many managers respond, "That's what secretaries are for."

That's like saying, "That's what keypunch operators are for." It's realistic, but short-sighted.

The important thing is the product. That's what work is all about. Providing managers and professionals with on-line access to the computer results in more product in less time and at a smaller cost, just as providing programmers on-line access to the computer does.

Managers must produce the original documents of their office paperwork, just as programmers must produce the original code.

Hardware costs continue to decline while personnel costs steadily increase. The more use an office can make of its computer hardware and software to help generate its products, the less money that office will have to spend on personnel costs.

With a little training and practice, managers and professionals can create and enter original documents into text files in about as much time as takes for them to write them out by hand or dictate them.

For some this is a difficult process to get used to. There are always those who like their way of doing things and will not change. Even they can be made more productive by taking their handwritten or dictated documents and having a secretary enter them onto one of the HP's text editing subsytems.

The original document should be created on the computer, where it can be processed by text processing subsystems, directed to various devices for output, automatically filed, backed-up, and stored, and for all intents and purposes be considered permanent.

Once an original document is on the computer, what's done to it becomes a choice of electronically-controlled options. Those options include printing it out on the word processor.

\* \* o Creating Original Documents \*
\* o Automatic Filing \*
\* o Multiple Output Options \*
\* o Formatting and Editing Software \*
\* o Auditing and Back-up \*
\* o Large File Capacity \* n and a second and File to Others. 🖓 🖓 👔 🖓 👘 Charles de la setter de la companya de la setter de la Exercising these options on the computer eliminate draft \* Exercising these options on the compact character \* copies and filing, save time and therefore personnel \* costs, and increase the amount of work that can be "The document's" produced during a given amount of time. The document's \* on file if it's ever needed again, and can be automatically \* located. It can be used again, copied and modified, \* extracted from, or incorporated into a larger piece. \* \*\*\*\*\*\*\*\*\*\*

The word processor should be used to produce the final product as much as possible, not to input it.

That's what the word processor is for — nice output. Concentrate on getting as much nice output from it as possible.

The disadvantages of typing original text on word processors outweigh the advantages. Local storage devices such as floppy disks are unreliable; file structure is neither logical or centralized; and options for making use of the file in other ways are limited.

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It's much better to connect the word processors up to the computer, type the original text on the computer, then print it out on the word processor.

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*
*
                       --TO SUM UP--
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*
    o It takes the same amount of time (or less) for managers *
*
       and professional staff to type short original documents
       into text files as it does for them to write them out
*
*
       by hand or dictate them.
*
*
       Word processors are better used as output devices than
    0
       as input/output devices.
```

o I c i	It is more efficient to enter original text onto the computer and transmit it to a word processor than it is to type it on a word processor.
o (	Once an original document is on the computer, printing and filing it become matters of exercising options.

Perhaps in the future, we'll be able to place the letter-quality printers under the supervision of the regular computer operators, and print final documents semi-automatically, as line printers do.

The office of the future will include a terminal on everyone's desk. The terminals will receive and display messages from around the world, and will accept input of messages, reports, communiques, tables, charts, and graphs for communication to somewhere else, local or otherwise. Much more paperwork and filing will be eliminated.

The small steps we have taken toward that eventuality bear this out. Our professional and managerial personnel clamor for convenient use of a terminal. Most now have them in their offices. Those who don't ask for them. They find they can do their work more efficiently on the terminal in the amount of time they used to spend getting someone else to do it for them.

The trend toward developing and marketing "executive work stations" is obvious. Wang came out with one. Xerox has one. Savin is coming out with one.

Xerox advertises theirs as "for business professionals, engineers, analysts, researchers," and so on. It handles electronic mail, aids in constructing tables, charts, and graphs, and handles filing, they say.

Well, that all sounds very impressive, especially to a new user. But the fact is we do all that with our HP3000, regular CRTs, and good software.

Daisywheel Price Ar & To '630' Printers Fortune Workstation Supports Ethernet Ho dwy 'And D SMU Tests Decision Room ", And Dropping/ Savin Launches Full-Fledged Drive Into Auto. Office Field Destek Local-Area Network Today, executives push buttons, too. Products For Automated Office Ergonomics And Productivity In Automated Office Market Office Market WorkSavnated Office Na Used W. Shows Man Data Gen. Shows Area Nets WP To Photocomposition Finance Advisor's WP Plugs Into Elect. Typewriter NBS Offers Elect. Mail Standard Au -**Creates Small Niche In WP Mart** Headlines such as these reflect the growing trend toward providing computer power to managers and professionals to assist them with their office work.