

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 section

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

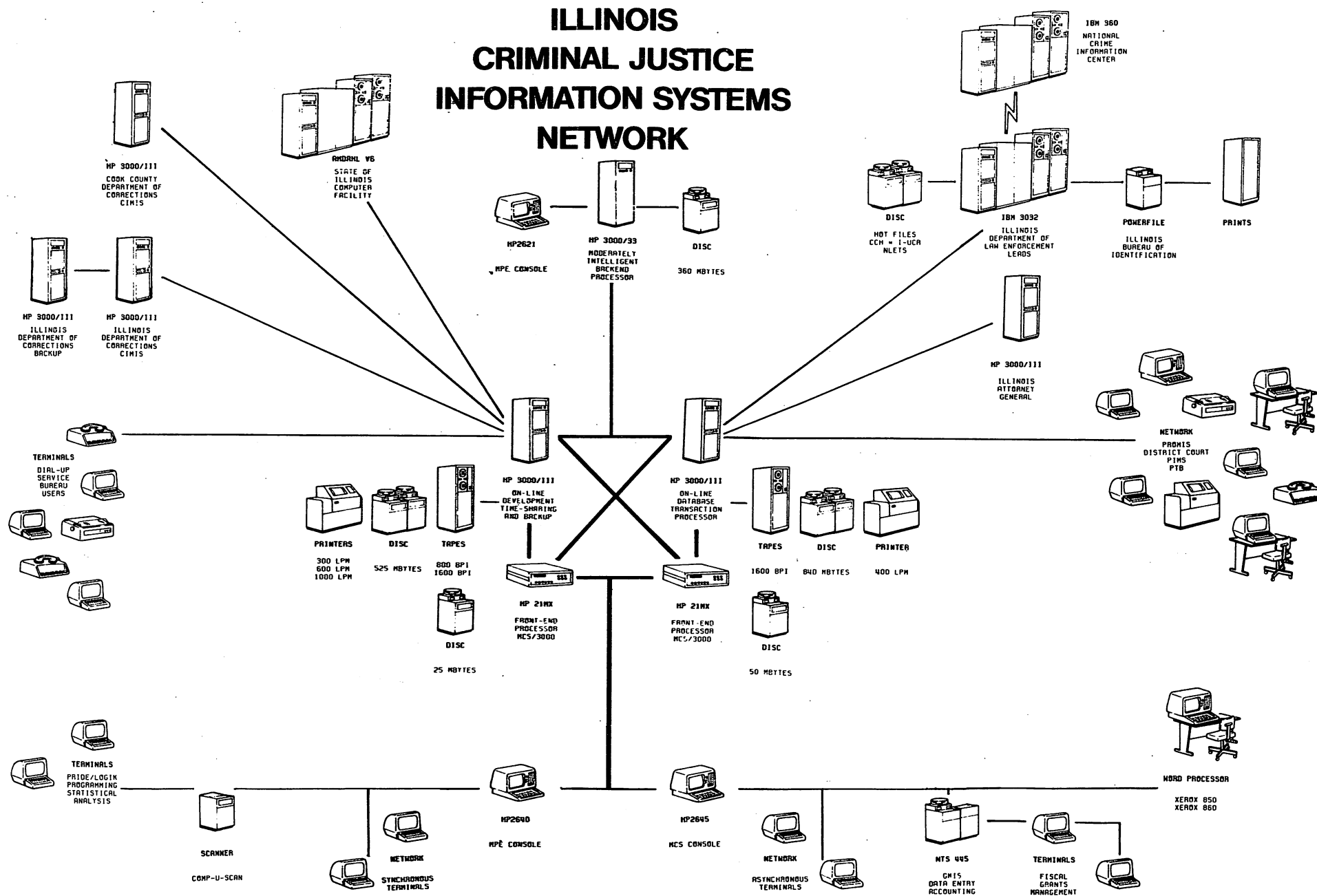
The Criminal Justice Information Systems Division (CJIS) of the Illinois Law Enforcement Commission functions as a computer consulting agency for other state and local Illinois criminal justice agencies.

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

Figure 1. CJIS hardware configuration



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  
*  
* and are automatically placed in the DOCUMENT group.  
* Managers and professionals are provided with similar  
* log on procedures.  
*  
*****
```

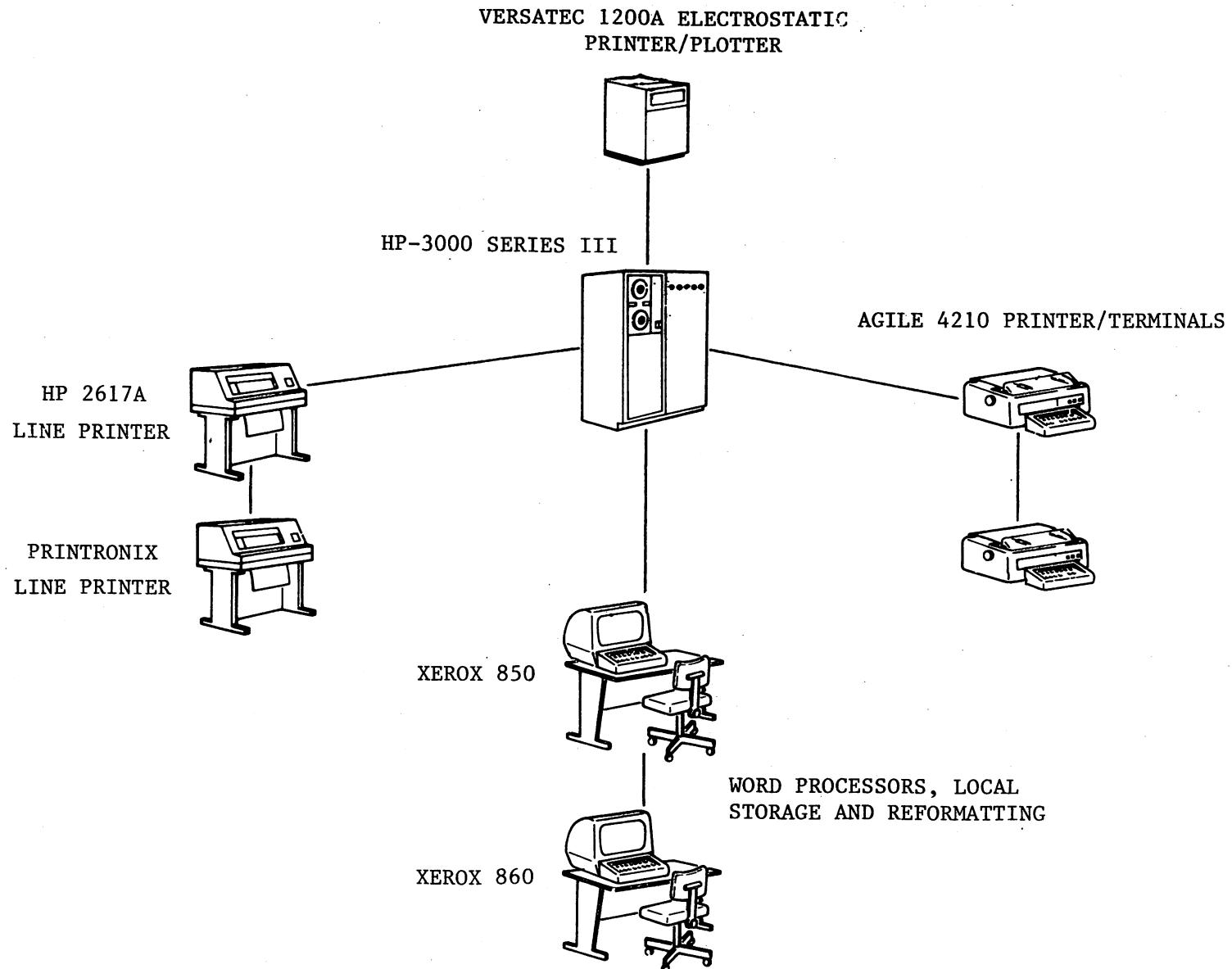


Figure 2. A person creating a letter, memo or other document has the option to direct it to a line printer, to tell a word processor operator to print it out, or to use the Agile printer/terminal to print it out himself. The plotter is used to produce charts and graphs.


```

*      :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:
*
*
* .NEWPAGE
*
* 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:
*
*
*   o The margins are set to 10 and 75 (EDIT2 defaults)
*
*   o Pagesize and pagelength are set to 66 to match
*
*   o 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.

5. — 65 — 9

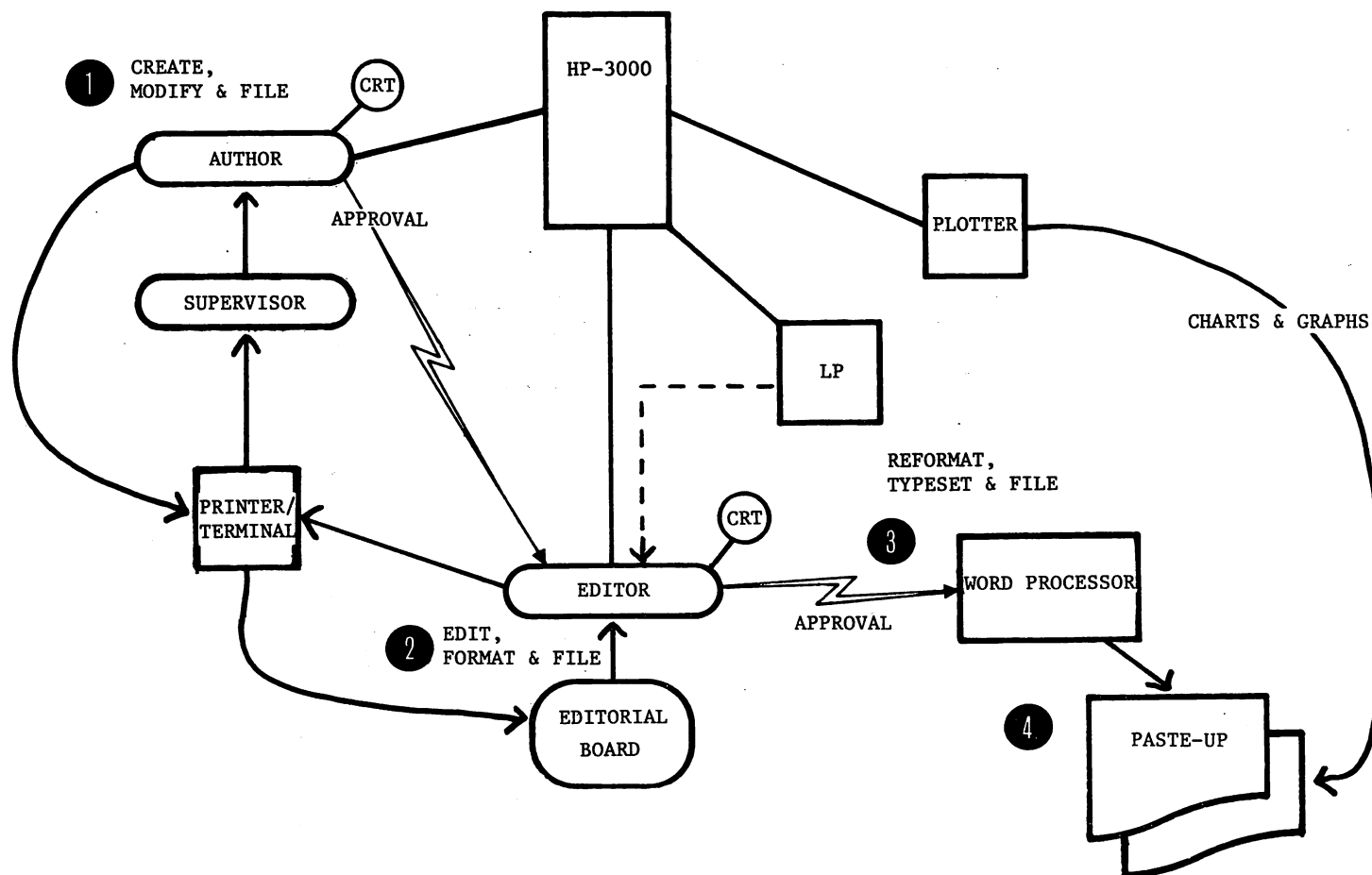


Figure 3. Steps in producing a newsletter with the assistance of the computer. (1) The author assigned to write an article creates a text file and prints out a copy for the supervisor's approval. Rewriters are done with the assistance of a text-processing subsystem. (2) The editor copies the article 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.

```

*      :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.
*
*
*****

```

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.

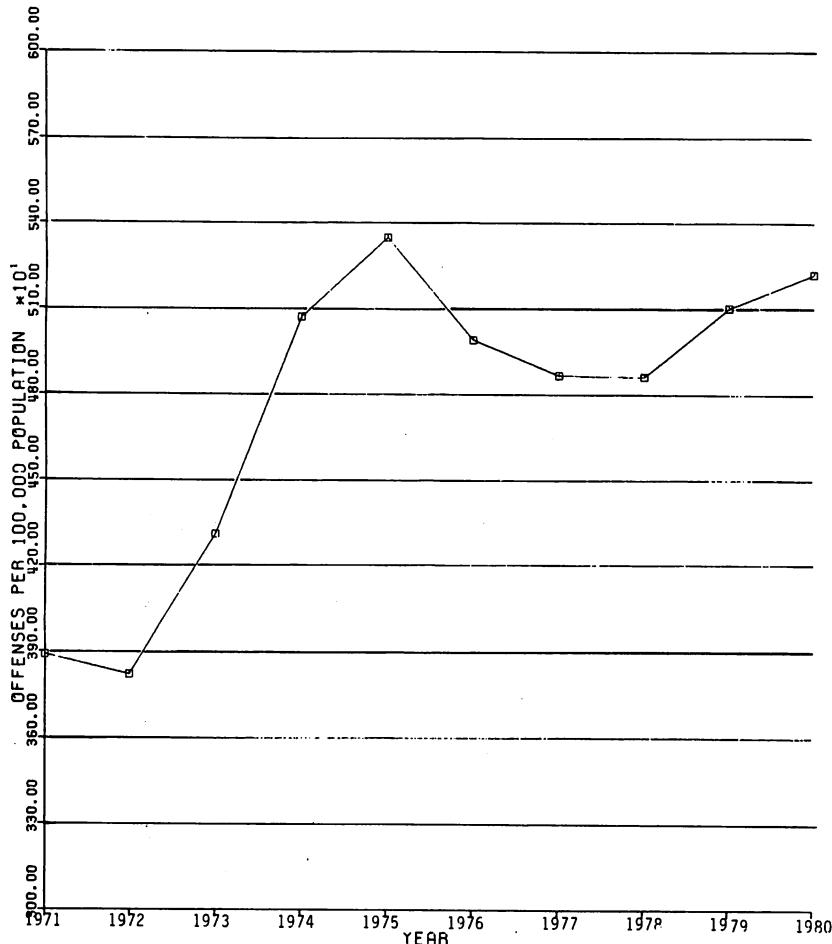
Any can be stored permanently on magnetic tape.

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.

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ILLINOIS INDEX CRIME RATES: 1971-1980



ILFEC/CJIS--STATISTICAL ANALYSIS CENTER GRAPH

Figure 1. The graph shows the pattern Illinois index crime rates have followed from 1971 through 1980.

**Index crime in Illinois
up 3.3 percent in 1980;
up 9 percent in U.S.**

Correction

In the previous issue of the COMPILER (June, 1981) an article appeared on Page 3 entitled, "Council Audit Finds BOI Records Lacking." In that article we erroneously attributed to Bureau Chief Gary McAlvey, of the Department of Law Enforcement's Bureau of Identification, the statement that the County of Cook has not reported any felony dispositions to the Bureau since 1978.

A review of the transcripts of the Illinois Criminal Justice Information Council meeting at which we claimed McAlvey made that statement clearly shows that he did not. He indicated instead that the Bureau of Identification has not **posted** any felony dispositions received from Cook County since 1978. We extend our sincere apologies to both McAlvey and the Office of the Clerk of the Cook County Circuit Court for this error.

In the same article, we accurately attributed another statement to McAlvey that the County of Du Page is not currently reporting criminal case dispositions to the Bureau. However, on June 24, Clerk of the Du Page Circuit Court John Cockrell told the Council that there is a misunderstanding. The Bureau has been receiving dispositions from Du Page County but not entering them into the system due to technical difficulties.

We hope this correction and the story appearing on Page 3 sets the record straight.

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.

While the articles are being reviewed, the lay-out

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, proportional-
* space columns, the WP operator calls up the stored document,
* and changes its recordable format block options to the
* following:
```

```
* Margins: 10 46 (36 chars. = 3" PS)
* Pitch: PS (Proportional Space)
* Justify: X (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
- * o Pitch
- * o Justify
- * o KB/PW (i.e., character set)
- * o Page Lay-Out
- * o 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.


```

*      /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
*      center, 6 lines (1 inch) from the bottom. The "\IMAGE"
*      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 subsystems.

```
*****  
*  
*  
* --TEXT FILE OPTIONS--  
*  
*  
*   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  
*   o Pass or Send File to Others.  
*  
*  
* Exercising these options on the computer eliminate draft  
* copies and filing, save time and therefore personnel  
* costs, and increase the amount of work that can be  
* 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 de-

- *
* o Regular CRT terminals are good enough "executive work
* stations."
*
*
* o 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 At \$600
 Fortune Workstation Supports Ethernet
 SMU Tests 'Decision Reckoning' And Dropping
 Destek Local Area

Fortune Workstation Supports Ethernet
Testbeds

Ethernics To '630' Printers

And Dropping/

Fortune Workstation Supp
Diabl
SMU Tests 'Decision Room'
in I
the nic

Destek Local-Area Network Plan For Micros Unveiled

Savin Launches **the** **Elect. Mail Link**

'Pony Express'

aid Corporate
As Bt
Choices

Corvus Interface Ties IBM, Xerox Units To Local Nets

Broadband Consider Defen

Broadband Considerations

Into Auto. Office Field

push buttons, too.

Ergonomics And Productivity In Products For Automated Office

Non-Tech Execs Can Use 'Maps'

Entry

Non-Tech Execs Can Use 'Maps'

Nestar Upgrade Used W/ Sh

Nestar Upgrade Used by Many Data Gen. Shows Many Area Nets

Electro

**WorkSaver Is NCR Entry
in Automated Office Market**

NBS Offers Elect. Mail Standard

Finance Advisor's WP Plugs Into Elect. Typewriter
Need For Typewriters As Printers
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.