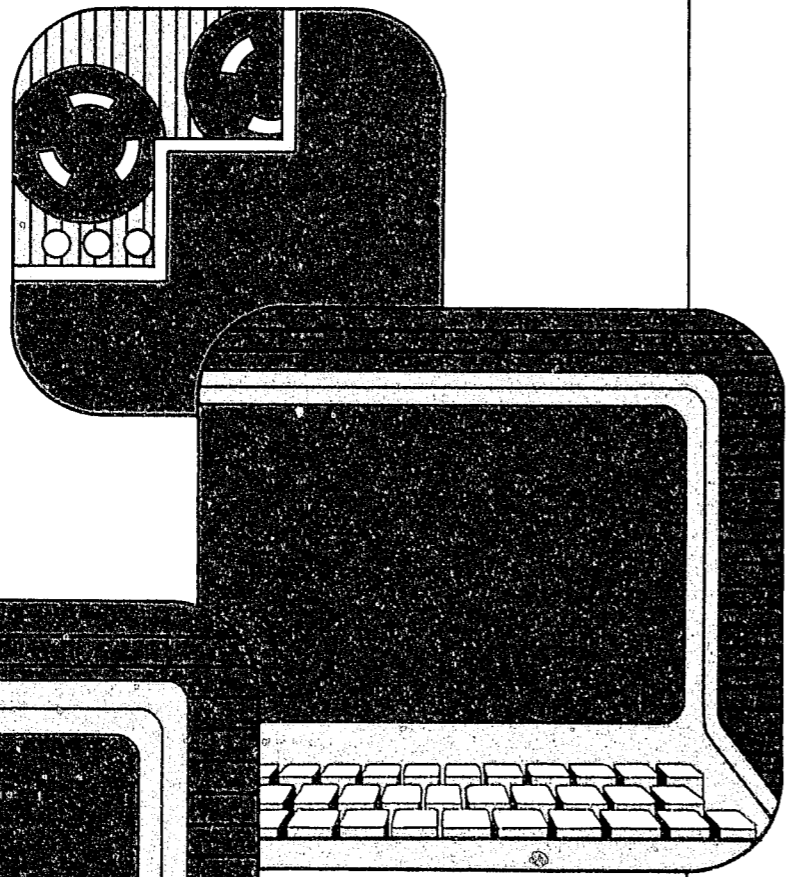


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WORD PROCESSING IN THE COURTS



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National Center for State Courts

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Introduction

This monograph is intended to assist court managers and analysts in understanding word processing technology and in working out a set of planning and implementation guidelines. A review of the court applications for word processing is presented first to assist in assessing a court's need for this technology. Sufficient information on the various types of hardware and software capabilities and applications available is included in Section 2 of Part I to explain some of the unique terminology used by manufacturers, consultants, and word processing specialists.

The reader will also learn how to conduct a "systems approach" assessment of word processing technology. To this end the following steps will be reviewed:

- determining the information processing requirements and deciding what types of word processing equipment will fulfill these requirements most efficiently and economically
- establishing the proper procedures for evaluation and acquisition of word processing equipment—in particular, specifications, standards, guidelines, and methodology that should be followed in the evaluation and procurement of word processing equipment

Although the general methodology and process of analysis in the "systems approach" are in principle similar for both data and word processing, different criteria, priorities, and analytical techniques are used in the evaluation and acquisition of word processing technology.

This monograph will not compare particular models or manufacturers of word processing equipment, nor evaluate all the functions and capabilities now available. The word processing industry and services

are changing so rapidly that such analyses would be quickly outdated. There are currently several sources for up-to-date information on word processing: commercial reports,¹ technical expertise at the National Center for State Courts, and other court consultants.

Some of the materials in this report are extracted and modified from two previous reports: Courts Equipment Analysis Project Report, *Business Equipment and the Courts: Guide for Court Managers*,² and the SJIS report, *Automated Information Systems: Planning and Implementation Guidelines*.³

It is hoped that this book will fill a long-felt need of court administrators for a reference work and guide to the field of word processing with the special needs of courts in mind. It was undertaken jointly through a grant from the Bureau of Justice Statistics and a project of the National Center for State Courts, and was subsequently revised to keep abreast of rapidly changing developments in word processing technology.

The principal NCSC staff contributors to *Word Processing in the Courts* were Mary Louise Clifford and two former staff members, Brenda N. Snyder and Lynn A. Jensen. J. Michael Greenwood, of the Federal Judicial Center, served as consultant in the first stages of the draft.

The authors wish to express their appreciation for the review and comment of several National Center staff members: Thomas G. Dibble, senior staff associate; J. Douglas Walker, staff associate; and Douglas C. Dodge, senior staff attorney. They also thank Brenda W. Jones for her care in the preparation of the manuscript, assisted by Pat Maddox, Lynn Adams, and Stacey Healy, as well as Carolyn McMurrin for her editorial suggestions.

1. *Word Processing and Information Systems* (monthly) (New York: Geyer-McAllister Publications); *Auerbach Word Processing Reports* (Pennsauken, N.J.: Auerbach Publishers); *Datapro Reports on Word Processing* (Delran, N.J.: Datapro Research Corp.); *Seybold Reports on Word Processing* (monthly) (Media, Pa.: Seybold Publications).

2. Denver: National Center for State Courts, 1977, now available from the Publications Coordinator, National Center for State Courts, 300 Newport Avenue, Williamsburg, Va. 23185.

3. State Court Information Systems and Statistical Reference Series, vol. 3 (Williamsburg, Va.: National Center for State Courts, 1981).

PART I

Deciding whether a word processing system is the answer

SECTION 1

Court applications for word processing

Modern word processors can produce almost any type of printed documents. The crucial issue is whether using word processors for the type of information a court expects to enter and the documents it produces is more efficient and effective than using standard typewriters or more sophisticated data processing computers.

Word processors are particularly advantageous for certain types of court documents, but provide only marginal improvements for other types. Rarely will a court install a word processor for a single application, except, perhaps, large courts with a high degree of job specialization. In most courts, word processing should be employed for an assortment of uses.

The applications that will make word processing useful to appellate courts differ somewhat from those most needed in trial courts because of the differences in the nature of the work. Appellate courts expend effort in drafting, revising, and publishing opinions; indexing cases by subject matter; maintaining dockets; monitoring submission of transcripts and briefs;

scheduling cases for oral argument; or processing and maintaining budget and accounting information. Trial courts have similar needs in maintaining indexes and calendaring cases, but their heavy needs are for lists (attorneys, jurors, defendants, etc.); filling out large numbers of forms (summons, warrants, subpoenas, juror notices, witness notices, attorney notices); and processing of case records.

Unfortunately, there is no formula or concise method of determining precisely the cost-effectiveness, cost-benefits, or suitability of a specific class of equipment for the courts. The performance needed from a word processing system will determine the choice and combination of equipment, the functions sought, the kinds of court personnel skills that must be developed, and the reactions of court personnel to the new technology. The potential production volume, the type of documents to be produced, and the service needs should be related to the cost, efficiency, and productivity of the word processing equipment being considered.

Assessing the suitability of word processors for meeting court needs

The various applications needed can be separated into two groups according to the functions the word processing equipment must perform in order to produce the kinds of documents needed in the courts. The first group includes all those text-editing applications that are involved in the production of manuscripts, fill-in forms and letters, standard documents, and

ordinary correspondence and memoranda. The second group comprises case tracking and processing, for which the word processor must be able to produce lists, indices, calendars, statistics, and tickler files. Each group will be discussed in turn, along with the word processing capabilities required for each.

Text-editing and forms production

Manuscripts

Manuscripts are documents (longer than five double-spaced pages) that normally will require extensive editing and rewriting. Usually the final copy must have no typographical errors, and may be used for extensive photocopy reproduction. Some manuscripts may be updated periodically over a lengthy period.

The following types of court documents would usually be classified as manuscripts: opinions, complex orders, manuals and regulations, administrative reports, studies, handbooks, and transcripts.

Manuscripts are an excellent use for word processing equipment. They meet most criteria for both effective and efficient use of this technology: frequent retyping of the same document; a significant amount of text to be revised; lengthy documents; error-free final copy; high-quality printed copy; documents

complex in content and format; and substantial variety of documents. In some cases, the documents must be typeset, which can be done directly from the word processor floppy disk.

Standard fill-in forms and letters

These documents contain standard text (usually 80-99 percent of the printed content remains unchanged) except for some personal or case-related information such as names (parties, case, and lawyers), case title, address, and date(s). (See page 4 for an example.) Usually, the printed copy will have official or legal significance and will be used frequently.

The following types of court documents fall into this category: notices, orders, form letters, jury notices, and subpoenas. They can be economically produced on a word processor in three ways:

(1) The form or letter and the variable information are recorded in two different documents in the word processor. Using the "document assembly/merge" function, the word processor automatically merges and prints the final forms or letters. This approach is applicable when

- large numbers (20-100) of the same letter need to be produced;
- the same variable information will be used in several letters;
- a substantial amount of variable information (more than five percent of the document) is entered;
- continuous-paper-feeding devices can be used;
- list processing and case record processing applications are available on the word processing system; and
- a high-quality original copy should be produced.

(2) The form or letter is recorded on the word processor and the operator types in the variable information as each document is being produced. This approach is substantially more time-consuming but may be appropriate when

- only a few copies of a form are produced each week;
- only a small amount of information needs to be changed;
- list processing or records processing and case tracking applications are unavailable or too cumbersome to use, or
- high-quality original copy is required.

(3) Preprinted forms with sufficient space to enter variable information are used. The variable information is recorded and printed on continuous preprinted forms. This can be an advantageous approach unless substantial preparation and planning for forms design, data entry, and production coordination are required. This approach is applicable particularly when

- very large numbers of forms (several hundred per week) need to be produced;
- list processing and records processing applications are used;
- an original document of high print-quality is not required.

STATE OF WISCONSIN CIRCUIT COURT		NOTICE TO APPEAR	Case Number
_____ County			
<input type="checkbox"/> State of Wisconsin <input type="checkbox"/> County <input type="checkbox"/> Municipality _____			
CLERK OF COURT			
This case is scheduled for a hearing as indicated below:			
	DATE	FOR <input type="checkbox"/> Preliminary Hearing	
	TIME	<input type="checkbox"/> Arraignment	
	LOCATION	<input type="checkbox"/> Pretrial Conference	
	ROOM	<input type="checkbox"/> Motion	
	JUDGE/ COMMISSIONER	<input type="checkbox"/> Trial	
		<input type="checkbox"/> Sentencing	
		<input type="checkbox"/> Disposition	
		<input type="checkbox"/> Other _____	
Date	By:	Initials	
Distribution <input type="checkbox"/> Prosecutor <input type="checkbox"/> Prosecutor's Copy <input type="checkbox"/> Attorney <input type="checkbox"/> Defendant <input type="checkbox"/> _____			
CR 202, 6/82, NOTICE TO APPEAR—CRIMINAL			

Example of a fill-in form

Standard "boilerplate" documents

Some court documents are assembled by merging various standardized paragraphs and inserting appropriate case-related variable information before the final document is printed. The standard paragraphs can be prerecorded on the word processor and assigned appropriate reference/glossary identification codes. The author can refer to a coding scheme, and the word processor operator can access and combine these paragraphs into a draft or final document with relatively few keystrokes. In addition, the operator can insert the variable information into the document using any of the procedures described above (standard fill-in forms and letters).

The following types of court documents may fall into the "boilerplate" category: jury instructions, complaints, presentencing reports, and probation reports. The productivity rate for these documents will vary tremendously according to the degree of

standardization and the amount of modifications and insertion of additional non-standard text. If more than fifty percent of the text must be revised, the approach should be reconsidered or revamped.

Correspondence and memoranda

These documents usually are short (one or two pages) in length and are typed with no or minimal revisions. The word processing operator can store the document and correct obvious typographical errors before producing the final copy.

The least efficient use of most word processing equipment is the production of general correspondence and memos; these should be a secondary, not the primary, purpose for obtaining word processing equipment. Authors who are careful about the content and form of such documents should seriously consider an electronic typewriter or personal computer, not the more expensive word processors.

WORD PROCESSOR CAPABILITIES NEEDED

The following capabilities are considered desirable for all text-editing and forms-generation applications that require full-time operation of the word processing equipment:

- storage medium: floppy diskette
- printer speed: 40-55 characters per second
- input terminal: keyboard with cathode ray tube (CRT)
- features and capabilities:
 - automatic centering
 - automatic line spacing
 - automatic page numbering
 - automatic pagination and repagination
 - backspace error correcting or strikeover
 - block-move/copy
 - continuous-paper-feeding device (for manuscripts, fill-in forms, form letters)
 - deletion
 - dictionary/glossary phrase insertion (for boilerplate documents)
 - document assembly/merge (fill-in forms, form letters)
 - document-oriented files (for manuscripts)
 - global search and replace
 - headers/footers

- horizontal scrolling
- insertion
- queueing of several documents for printing
- search
- simultaneous printing/editing of different documents
- stored and default formats
- sub- and super-scripting
- vertical scrolling
- word wraparound

These required functions for full-time operation dictate that court managers should look at word processors in the medium and higher price ranges to secure satisfactory performance. If the workload is not great enough to require full-time operation, a personal computer that offers most of the capabilities may be adequate.

Additional text-editing features and capabilities that would be helpful but not absolutely necessary are the following:

- automatic widow/orphan adjustment
- justification
- hyphenation: hot zone and scan
- automatic footnote tie-in
- records processing software

Records processing and case tracking

Records processing is among the more recent enhancements available in many word processors. Courts with small or medium-size caseloads may find it cost-effective to evaluate word processing equipment for the uses described above and at the same time study the feasibility of performing records processing on a small scale on the word processor. A rule of thumb for deciding whether the case volume is

appropriate for a word processor would be the ease with which the statistical reports needed for case management and resource allocation purposes can be manually prepared. Caseload inventory and manner-of-disposition statistics, trend analysis, age of disposed and pending caseload cannot be handled easily or quickly on a word processor, but if their manual preparation is no problem, then a word

processor can probably handle a court's records processing and operational case tracking needs.

Records processing software capabilities enable the more sophisticated word processors and microcomputers to perform some complex data processing functions traditionally accomplished on larger data processing computer systems. Word processors now can maintain a computer database that provides comprehensive information, reduces duplication of data, and also permits rapid entry and retrieval of information in order to satisfy a variety of needs. Each manufacturer's records processing package contains a software program that automatically handles the organization, cataloging, location, storage, retrieval, and maintenance of the data for each record. Most of these packages have simplified methods enabling nontechnical personnel to enter, update, inquire, retrieve, and print any or all information contained in a specific record or an entire file (a group of related records).

The database can be used to produce a variety of reports, listings, indices, statistics, and tickler files. In addition, selected pieces of information in particular case records can be merged into other documents to produce various forms and notices.

Records processing software that is employed primarily for case-tracking and monitoring information can also be used for several other court applications, such as equipment inventory, court personnel records, and attorney lists.

Compared with the larger data processing systems available, the records processing software packages available for almost all standalone word processors and minicomputers and for many shared-resource word processors presently available have limitations in the following areas:

- data entry verification and error checking
- size of the database (i.e., the number of characters of information for each record, the number of fields of information contained in each record, or the total number of records or total characters of information that can be stored and manipulated)
- speed and means of storing and accessing the information
- computational power and data-manipulation capabilities (e.g., limitations on how records are selected and sorted, making both procedures slow and cumbersome)
- methods of updating records and producing reports
- the number of auxiliary files available

On the other hand, records processing packages for word processors do not require computer programmers, and they permit court employees to learn, operate, and maintain a computer-type data system easily. Some systems offer glossary capabilities that do permit the operator to write instructions to perform fairly complex data sorting functions.

Court managers must recognize that it takes substantial planning and processing resources to develop

and operate adequately any case record information system. The purpose and the size of court databases vary so widely that both productivity gains and cost savings are difficult to estimate.

The court must properly review and analyze the information requirements to determine

- precisely what pieces of information must be collected;
- how this information should be represented in the database (abbreviations, codes, full text);
- how the information will be accessed, modified, and indexed;
- how rapidly inquiries must be answered;
- how cases should be stored, grouped, and accessed;
- what types of operational reports must be produced and distributed and in what format and frequency;
- whether statistical reports are needed for case management reports (beyond the capabilities of word processors); and
- how accurate and up-to-date the information must be.

Generally, the larger the database and the more intricate the data analysis and reporting requirements, the bigger and more powerful the word processing resources needed. If larger capacities are needed, the court can acquire larger storage media (e.g., larger, rigid "Winchester" disks) and larger computer memories. On most word processors, however, both software and hardware limitations will remain. Word processors that can handle records processing and case tracking will not provide the data processing capabilities needed for producing statistical reports for case management purposes.

Many courts that use records processing software on their word processors have underestimated their requirements—particularly the number of fields of information needed for each case and the number of cases that ultimately must be processed and analyzed. They have also overestimated the word processor's capacity and capabilities, particularly the speed and flexibility of accessing information and producing listings.

To assure adequate system responsiveness and satisfactory performance, certain database limitations are necessary in the use of most word processors for records processing, as follows:

- no more than 400 to 500 characters of information in each record
- no more than 40 to 45 fields of information in each record
- no more than 2,000 to 2,500 cases in a single file
- a separate file on a large disk or on a separate floppy disk for each major type of case category (civil cases or subcategories thereof, criminal cases or subcategories thereof, inactive cases)
- one terminal (CRT) available for every 800-1,200 active general jurisdiction cases; or for every 2,000-2,500 active limited jurisdiction cases

WORD PROCESSOR CAPABILITIES NEEDED

Efficient records processing requires the word processor to perform the following functions:

- multiple-field sorts and rapid sorting
- multi-field selects and rapid selecting
- data entry and error checking
- arithmetical functions including calculation of dates
- flexible file and field access
- database and document assembly/merge
- production and manipulation of statistical charts

If the court wants to manipulate records to produce statistical reports of any kind, applications such as glossary-writing capability are needed that permit the computer to select multiple fields at a fairly rapid speed. If these applications on the word processing software are slow and cumbersome, or cannot handle the volume of work projected, they may not be as cost-effective as software applications that would be available on a data processing computer.

SECTION 2

What are the options?

In evaluating a court's need for word processing, it is important to have a clear understanding of what word processing is and what options are available in selecting a system. This section discusses the develop-

ment of word processing; distinction between word and data processing; word processing system components and software capabilities; system configurations; and types of word processing systems.

Development of word processing

Although an outgrowth of the computer industry, word processors were developed as a separate type of office equipment rather than as an extension of data processing systems. The purpose of word processing equipment was to automate the production of much of the paperwork in an office.

The two major differences between the first word processors and electric typewriters were the magnetic storage and text writing capabilities provided by the word processor. The magnetic storage capability allowed the typist to store and recall documents for revision, thus eliminating much retyping. The text editing capability allowed the typist to correct any errors and to make editorial changes more easily—text could be removed, added, or rearranged. Form

letters, previously requiring many hours of repetitious typing, could now be typed once and automatically merged with a mailing list to produce personalized letters. Although the early word processors offered limited error-correcting and storage capabilities in comparison with today's word processors, this was still a major step forward in automating the office.

Through the 1970s, data and word processing systems usually existed in the office as separate entities with little interaction. In the 1980s, the trend is away from this single-task approach to office automation toward integrated office systems that serve both the word and data processing needs of an organization.

Distinction between word and data processing

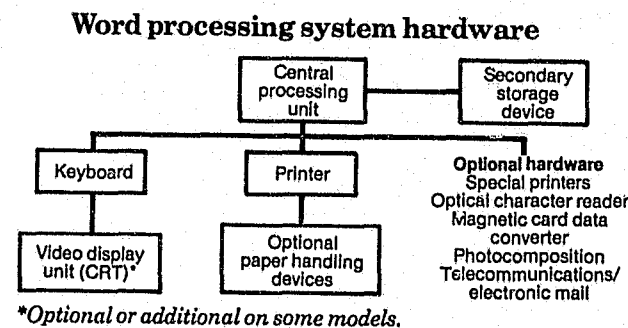
It is important to understand the differences between word and data processing when selecting office equipment. Word processing is the creation and editing of text—e.g., correspondence, manuscripts, and lengthy reports. Data processing is the manipulation of numerical information—e.g., processing a payroll, managing records, and forecasting trends. Simply stated, word processing involves primarily words, data processing involves mostly numbers.

With the move toward system integration, the distinction between word and data processing applications is often unclear. "Software" packages to handle tasks such as statistical analysis, records

management, and lengthy mailing lists have been introduced by word processing vendors. These tasks were previously considered data processing applications. As a rule, such packages are most successfully used on word processing systems with large memory and storage capacities. Conversely, many data processing manufacturers have introduced word processing software for their computer systems, with the more sophisticated software found on the larger computer systems. These word and data processing software packages vary widely in their effectiveness and should be researched thoroughly before purchase.

Word processing system components and software capabilities

A word processing system consists of hardware and software. Hardware consist of physical devices: the central processing unit, the keyboard, the video display unit, the storage device, the printer, and the optional special-purpose equipment. The hardware components for single-task word processors (referred to as dedicated systems) and integrated systems are the same. Software is composed of the stored instructions that make the hardware function as a word processor. The following diagram illustrates a word processing system and its components:



Basic hardware

Central processing unit

The purpose of the central processing unit (CPU) is to store and process information. Data received from the keyboard, or other input device, are processed and sent to storage or to a printer or other output device. The central processing unit consists of the control unit, the logic unit, and the storage unit.¹

The control unit interprets instructions so that the proper operation takes place. The operations are carried out in the logic unit and the storage unit. The logic unit handles all logic decisions. The storage unit, which is also referred to as the primary memory, stores the instructions and information received from the input device.

In the selection of a word processing system, an important consideration is the size and expandability of the memory. Generally, systems with larger memory sizes offer a greater range of capabilities. Expandability of the memory is an important design feature of word processors. With expandable memory, it is possible to broaden the range of capabilities by increasing the memory size and adding more sophisticated software.

Keyboard

The keyboard, which is the primary input device of a word processor, resembles a standard typewriter keyboard. In addition to the standard keys, there are special keys for activating the word processing functions. Some systems use labeled function keys such as "delete," "insert," or "replace" to indicate the appropriate key to press. Other systems use mnemonics in which a code key is pressed in conjunction with standard keys to activate functions (e.g., code key and the letter "d" to delete text).

Cathode ray tube (CRT)

A video display unit attached to the keyboard enables the typist to view the text on a TV-type screen before the document is printed. Typists locate changes to be made with a movable cursor and enter the appropriate editing commands with various function keys. The revisions take place in the control unit and then appear on the screen immediately. The visual display of text speeds up the editing process by eliminating the need to wait for a printed copy of the document to see the revisions.

Disk storage

Disk storage is the secondary or auxiliary storage unit of a word processor. This device consists of two parts—the storage medium (disk) and the disk drive, which records and reads information on the disk. The most popular storage media at the present are flexible ("floppy") diskettes for small word processing sys-

tems and rigid ("hard") disks for multiterminal systems.

A diskette is a mylar disk encased in a cardboard protective cover. These range in size from 3.5 to 8 inches in diameter and can contain from 15 to more than 100 pages (60K to more than 200K) of information. A rigid disk, which is a more durable storage medium than a diskette, ranges in size from 5¼ to 14 inches in diameter and can contain from 200 to more than 700,000 pages (1 Mb to more than 600 Mb) of information.² Rigid disks are available as removable and nonremovable (fixed) disks. Small multi-terminal systems often use a combination of nonremovable and "floppy" disk storage devices. Larger multi-terminal systems, because of their increased storage requirements, rely less on "floppy" diskettes and often use a combination of nonremovable and removable disk storage devices.

Prospective purchasers of word processors should be aware of the incompatibilities in the way vendors store information on disks. Few word processing manufacturers store or retrieve information on the disk in precisely the same manner, nor do they adhere to standard methods of coding, as data processing manufacturers do. Information cannot easily be exchanged between different vendors' disks. Thus, it becomes very important to select a word processor that can be expanded as needs change or increase.

Printer

The printer, which is the primary output device on a word processor, produces the "hard" or printed copy of the information typed into the system. The two types of printers used with word processors are impact and nonimpact printers. Impact printers use a striking mechanism and a ribbon to create the characters; nonimpact printers use some other method (such as ink jet or laser) to create the characters.

The most commonly used printer for a word processing system is an impact printer with a removable "daisy" or thimble-type printing element. The printer produces letter-quality copy at speeds ranging from 20 to 55 characters per second (CPS). These printers offer a wide variety of type styles and are available in wide-track and twin-track versions. The wide-track printer allows the printing of documents of more than 200 characters in width (more than twice the width of normal letter paper), and the twin-track printer has dual print elements for specialized printing.

In installations where there is a high volume of printing, matrix and line impact printers are sometimes used. Because of the relatively poor quality of

1. V. Thomas Dock and Edward L. Essick, *Principles of Business Data Processing*, 4th ed. (Chicago: Science Research Associates, Inc., 1981), pp. 76-81.

2. *Datapro Reports on Word Processing* (Delran, N.J.: Datapro Research Corp., 1982), p. 115.

the result, these printers are used primarily for draft copy. Matrix printers print several hundred characters per second, and line printers print several hundred lines of text per minute. Matrix printers are now available that can be used for both letter quality and high-speed draft printing. However, the quality sometimes lacks the crispness of the daisy or thimble printer.

Two types of nonimpact printers, laser and ink jet, are being used with increasing frequency on word

processing systems. Laser printers burn images onto a cylinder, and ink jet printers spray ink to form the desired character. Laser printers can print up to 120 pages per minute; ink jet printers can print about 100 characters per second. Laser printers can produce excellent letter-quality printing, but the present technology is considered complex, costly, and unreliable. The print quality on the ink jet printer is less desirable, but it is lower in cost and more reliable.

Optional hardware

Paper-handling devices

Automatic sheet feeders and envelope feeders can be attached to printers to provide unattended paper handling. The feeders insert each new page or envelope, position it, eject it after printing, and insert the next sheet or envelope. Additional features available on some feeders are collation, automatic pagination, and paper trays for various paper sizes.

A forms tractor and pinfeed platen are other devices used for automatic paper feeding. These require the use of continuous-form paper with sprocket holes punched in a perforated margin for automatic feeding through a printer. Letterhead stationery, envelopes, and standard forms can be mounted on continuous-form paper for use with tractors and pinfeeders.

Data-conversion devices

Hardware can be added to word processors so that data from one type of medium can be transferred to another, reducing or eliminating the need to rekey documents that have already been typed on a word processing system or on a typewriter. There are several such devices.

Optical character reader

An OCR is a data-conversion device that scans printed material and, through machine recognition of printed characters, converts the typed copy into computer-readable form. The use of OCR allows an ordinary typewriter to serve as an input device for a word processing system. Secretaries using typewriters equipped with an OCR-readable element can prepare the initial draft. The typed pages can be fed into an optical scanner and read electronically into a word processor. Many type styles can be read by the new OCR devices. An advantage of an optical character reader is that fewer word processing terminals are needed since they will be used primarily for editing, formatting, and printing.

Magnetic card data converter

Magnetic cards are a popular method of storage on some electronic typewriters and word processing systems. A magnetic card data converter is a device that transfers the information from magnetic cards to a magnetic disk without rekeying the documents. This device is frequently used for media conversion

when an office is upgrading from a magnetic card system to a disk system.

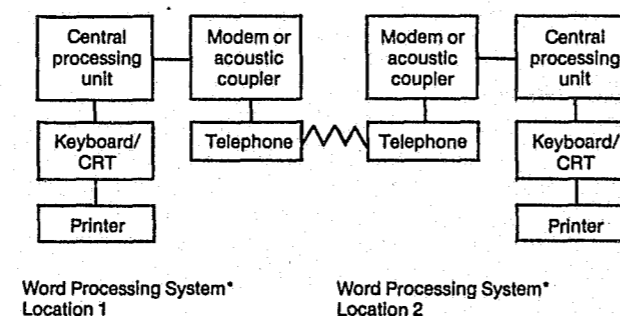
Data conversion interface

Text-editing equipment with the proper data-conversion interface device can transfer information from a word processing system to a phototypesetting system to produce typeset documents. The word processor can be cable-connected to an in-house typesetter or, using a telecommunications device, the information can be sent to an outside printer's typesetting equipment.

Telecommunications and electronic mail

Telecommunications is a term used to describe the communication between compatible word processing or data processing systems within an organization or using telephone lines. Telecommunications capability can be added to most word processing systems by purchasing additional hardware (acoustic couplers or modems) and software. Using this hardware and software, information can be transmitted by telephone from a word processing system to a computer, another word processor, phototypesetter, or other device. This process is now being used to transmit daily correspondence, contracts, and other business mail. The following diagram illustrates a typical system with telecommunications:

Typical set-up for telecommunications/electronic mail between two word processing systems



*Telecommunications software added to both systems.

Software

In contrast to the tangible hardware components of a word processor, software consists of the programs that govern the operation of the system. The software allows the operator to instruct the central processing unit how, what, and when to perform various functions. There are two types of software: *system* and *applications*. System software controls the basic operation of the word processor. Applications software is designed to perform specific tasks.

On a "dedicated" word processor, system software includes all standard word processing functions and is provided by the manufacturer as a part of the basic system. Applications software for some dedicated systems includes list processing, math programs, and operating systems that allow the system to function as a microcomputer.

On microcomputers, most system software is incorporated in the operating system. Word processing is one kind of applications software for a microcom-

puter. On small computer systems, word and data processing operations cannot take place simultaneously. The computer functions as a word or data processor, depending upon the applications program that is loaded in the computer. On larger fully integrated systems, word and data processing operations can take place simultaneously in the central processing unit (CPU).

Although the word processing capabilities required are dictated by the tasks to be accomplished, it is important to understand what is generally considered to be the set of standard functions as well as the optional capabilities found on some word processors. The standard functions should be a part of any good word processing software program. Optional capabilities should be evaluated and selected according to individual need and cost. The following list describes these software functions and capabilities.

WORD PROCESSING SOFTWARE CAPABILITIES

Standard Functions

- INSERT/DELETE.** Ability to add or remove text from a document.
- ERROR CORRECTING.** Ability to make a correction by typing one character over another.
- AUTOMATIC CENTERING.** Ability to automatically center designated text between margins.
- DECIMAL ALIGNMENT.** Ability to automatically align columns of figures on the decimal point.
- BLOCK-MOVE/COPY.** Ability of system to move or copy designated text to another location in the same document or to another document.
- SEARCH.** Ability of system to locate a character string (segment of text) specified by an operator.
- GLOBAL SEARCH/REPLACE.** Ability of a system to search for repeated occurrences of a designated character string for deletion or replacement.
- AUTOMATIC UNDERLINING.** Ability to automatically underline text during input. On some systems, there is an additional underlining feature that allows designated sections of text to be automatically underlined after input.
- HORIZONTAL SCROLLING.** On systems with a CRT, the ability of the cursor to move horizontally along a line of text to access more characters than the screen can display at one time.
- VERTICAL SCROLLING.** On systems with a CRT, the ability to move vertically a line at a time, through the entire text.
- WORD WRAPAROUND.** Ability of a system to move a word to the next line automatically if the word does not fit on the line being typed.
- HYPHENATION.** Methods used by word processors for determining the proper hyphenation points for end-of-line word divisions. See the glossary for definitions of different methods such as "hot zone" hyphenation, discretionary hyphen, and hyphenation scan.
- DOCUMENT ASSEMBLY/MERGE.** Ability to combine several documents to create new documents. Also refers to the merging of letters and addresses to print personalized letters.
- AUTOMATIC PAGE NUMBERING.** Ability of system to number document pages automatically and to renumber them when text is rearranged.

- REPAGINATION.** Ability to change page endings after a document is edited, rearranged, or if a new page length is desired.
- SUPER/SUBSCRIPT PRINTING.** Ability to print footnote notations, formulas, etc., a fraction of an inch above or below the line.
- HEADERS/FOOTERS.** Information to be printed automatically at the top (header) or bottom (footer) of all or most pages of a document.

Optional Functions

- FOOTNOTING ROUTINE (or TIE-IN).** Ability to link footnotes to applicable text so that footnote appears on proper page.
- DUAL COLUMN.** Ability to format text in two side-by-side columns.
- COLUMN MOVE/DELETE.** Ability to isolate columns of information and restrict the editing function to that column.
- WIDOW/ORPHAN ADJUSTMENT.** Ability of system to prevent first line of a paragraph, a title, or a heading from being the last line on a page.
- FILE SELECT.** Ability of the system to retrieve information from data files, as specified by the operator.
- DEFAULT FORMAT.** A format setting, with commonly used margin and tab settings, that is automatically implemented by the system when a format is not specified by the operator.
- STORED FORM RECALL/DISPLAY.** Ability of a word processor to store a form and display it when needed. This form can also be combined with new keyboard text and stored separately.
- FORMS INPUT.** Ability of the system to space from field to field with a single keystroke to fill in a prerecorded form.
- STORED MULTIPLE FORMATS.** Ability to store several formats (tab and margin settings) and recall them as needed.
- JUSTIFICATION.** Ability of system to print documents with an even righthand margin. Some CRTs can display justified copy on the screen.
- PROPORTIONAL SPACING.** Ability to print text that is similar to typeset documents in appearance (different amounts of space between characters on different lines). Some CRTs display proportional spacing on the screen.

SIMULTANEOUS PRINTING/EDITING. Ability of system to print a document while an operator is working on another document.

EXTRA-WIDE LINE WIDTHS. Ability to create wide documents, usually in excess of 200 characters.

GLOSSARY. Ability to store frequently used phrases, editing, commands, or complete applications. This information can be recalled with a minimum of keystrokes.

Optional Software Capabilities

FILE SORT. Ability to arrange data in alphabetical or numerical order.

MATH. Ability to perform math calculations and column totaling.

DICTIONARY/SPELLING VERIFIER. Ability to match words against a prestored dictionary to check for spelling or typographical errors.

RECOVERY. Ability that allows an operator to salvage data from damaged disks.

SYSTEM SECURITY. Ability to restrict access to a system, usually by requiring users to have passwords.

TYPEWRITER FEATURE. Ability to access the printer directly and use it as a typewriter.

RECORDS PROCESSING. Ability that allows an operator to retrieve selected information from files, categorize the files, and generate reports as a result of this process.

COMPUTER LANGUAGE COMPILER. Allows the system to be programmed by the user.

MICROCOMPUTER OPERATING SYSTEMS. Programs designed for use on microcomputers that can be used on some word processors. The word processor can then function as a microcomputer and accept microcomputer applications programs.

System configurations

There are three general configurations for word processing systems: *standalone*, *shared-resource*, and *shared-logic*. The following factors should be determinants in selecting configurations:

- *Location of the components.* Are the components to be located in a central facility, distributed throughout a single building, or located in several different buildings?
- *System capabilities.* What capabilities, storage capacity, and memory size are needed?
- *System expandability.* What are the future needs of the court? Does the court anticipate adding workstations or other devices? Is it possible to add components to the system or to expand the memory for greater capabilities?
- *Access to special devices.* Are some of the system components to be shared by more than one workstation?

Standalone

A standalone is a single-terminal word processor that contains all the hardware necessary for an operator to work independently of any other system.³ Standalone systems are selected most often by the single-terminal user who sees no immediate or projected need for more than one terminal. However, even for the multi-terminal user, the location of terminals may necessitate the selection of standalone word processors. In most multi-terminal systems, components are connected by cable to the central processing unit. If the distance between the terminals makes it impractical or impossible to connect the devices to a central processing unit or if the travel would be too burdensome for the operators, then standalone systems should be used.

Shared-resource

A shared-resource word processor is a multi-terminal system in which each terminal has its own

central processing unit but shares other components. Standalone systems with shared-resource capability can be connected to printers, storage devices, or special-purpose equipment. This usually results in better utilization of the shared equipment.

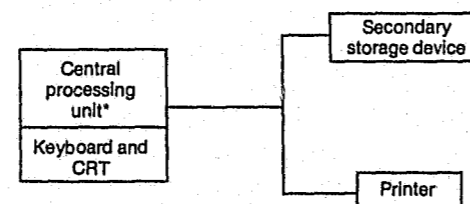
Shared-logic

A shared-logic system is a multi-terminal word processor in which the terminals share the central processing unit as well as other system components. Courts that initially need a multi-terminal system or are interested in replacing a standalone or shared-resource system with a more powerful system should consider a shared-logic system. Since system components are shared, the shared-logic system provides for more efficient use of the shared components. Shared-logic systems may also provide a wider range of capabilities, more storage capacity, and a faster operating speed than standalone or shared-resource systems. Terminals can usually be added to a shared-logic system at less cost than required for purchasing additional standalone equipment or adding terminals to shared-resource systems.

The basic price of a shared-logic system is substantially higher than that of a standalone system, but the cost per workstation may be substantially lower than a comparable number of standalone word processors.

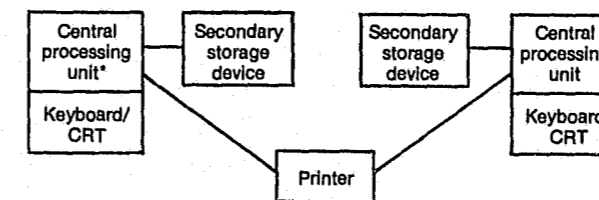
The following diagrams illustrate standalone, shared-resource, and shared-logic configurations.

Typical standalone system



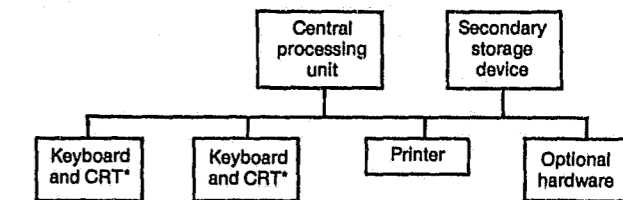
*In standalone systems, the same hardware often houses both the central processing unit and the CRT.

Typical shared-resource system using standalone systems



*In standalone systems, the same hardware often houses both the central processing unit and the CRT.

Typical shared-logic system



*The number of CRTs is dependent on the size of the system.

Types of word processing systems

After the need for a word processing system has been determined, a decision has to be made whether to select a low-cost personal computer, a single-task "dedicated" word processor, or an integrated word and data processing system.

Personal computers

Although this monograph is primarily about dedicated word processors, there are many situations in small courts where the less expensive personal computer may be adequate to do the limited text editing and forms production required. Software that handles name-and-address records, generates matrices of these records, produces forms and address labels, and performs a variety of accounting functions can be purchased for these computers.

The principal drawback of a personal computer is that operator training is not included (although it is available if the purchaser wishes to pay for it), and the user manuals require some time to master. If, however, cost is an important factor, good personal computers are available for as little as \$3,000.

There are more choices available to the buyer of the personal computer than to the purchaser of a dedicated word processor, and some of these are fairly important to the individual who is going to spend a substantial amount of time working at the CRT. In addition to selecting the size and expandability of the computer's memory, the buyer can choose between a detachable keyboard and a keyboard fixed to the terminal. The detachable keyboard permits the operator to arrange his working materials more flexibly than at a fixed CRT. Different keyboards have different touches as well, and an easily operated keyboard is more restful than one that is less responsive. Screen sizes vary, as does the amount of copy that can be displayed on the screen. The ease with which the screen can be read is important, as is the angle at which it sits. Printers vary, both in the style of print and in the noise they make. Many such factors affect the operator's comfort, and should be tried out personally when choosing a personal computer.⁴

4. A good reference on this subject is Peter A. McWilliams, *The Personal Computer Book* (Los Angeles: Prelude Press, 1983).

Dedicated word processors

Dedicated word processors range from electronic memory typewriters to large multi-terminal shared-logic systems. The following tables illustrate the features, magnetic media, components, and software associated with dedicated word processors. The reader should study the figures carefully to obtain a comparative view of dedicated word processing systems.

The primary consideration in selecting a dedicated system lies in the word processing needs of an organization. The system selection process is straightforward and involves compromises concerning only capabilities, cost, available hardware, and vendor servicing and training. After the system has been installed, management and use of the system should be coordinated through a word processing manager.

Integrated word and data processing system

As mentioned earlier in this section, many computer manufacturers are now offering word processing software for their computers.

Selection of an integrated system is potentially more complex than selection of a dedicated system. The process involves two user groups (word and data processing operators) and requires that both groups be adequately represented. Consequently, the list of required capabilities is greatly expanded. Choosing a system becomes complicated because compromises are necessary by both groups. It is often difficult for word and data processing personnel to agree on a particular system. Often a system with good data processing capabilities will have marginal word processing capabilities. Systems that will satisfy the data processing requirement will often cost less than those that satisfy both the data and word processing requirements.

Another issue that arises in the selection of an integrated system is how it will be managed. Will there be word and data processing managers of the system, or will one manager be in charge of the entire system? If there are separate managers for word and data processing, coordination and cooperation is essential between the managers. If there is one manager, that individual must understand the needs of both the word and the data processing operations.

3. See Willoughby Anne Walshe, "How WP Systems Are Meeting the PC Challenge," *Office Administration and Automation* (October 1983) for a comparison of standalone systems offered by thirty vendors.

The optimum use of the system can only be achieved through good management.

The following tables show the standard features to be found in dedicated and integrated systems,

personal computers, electronic typewriters with text-editing capability, standalone or shared-resource systems, and shared-logic systems.

Comparison of dedicated and integrated systems		
<p>Dedicated word processors</p> <p>Word processing capabilities are usually highly developed.</p> <p>Range of optional hardware is usually extensive.</p> <p>Limited data processing capabilities are sometimes provided.</p>	<p>Usually easier to operate than integrated systems because the keyboard has more function keys.</p> <p>Systems are designed for non data-processing personnel, which makes the training process easier.</p>	
<p>Integrated word processors</p> <p>Microcomputers are usually less expensive than dedicated word processors.</p> <p>Word processing software for microcomputers is purchased separately and is usually not as powerful or as easy to use as the software on a dedicated word processor.</p> <p>Range of optional hardware is usually extensive.</p> <p>To obtain word processing capabilities comparable to those</p>	<p>found on the larger dedicated systems usually requires the purchase of a minicomputer, which is larger and more expensive than a microcomputer.</p> <p>Because system hardware is multifunctional, it may be less expensive to purchase an integrated system than separate word and data processing systems.</p> <p>Integrated word processors offer the capability of merging data and word processing files.</p>	

Standard features for easy comparison of personal computers		
PERSONAL COMPUTER		
<p>Components</p> <p>Keyboard</p> <p>CRT</p> <p>Disk storage device</p> <p>Printer</p>	<p>Storage media</p> <p>Flexible (floppy) diskette</p> <p>Mini-diskette: 15-40 pages</p> <p>Micro-diskette: 75-100+ pages</p>	<p>Storage capacity</p> <p>Flexible (floppy) diskette</p> <p>Mini-diskette: 15-40 pages</p> <p>Micro-diskette: 75-100+ pages</p>
Word processing/system capabilities and functions (see Glossary for definitions)		
<p>Insert-delete</p> <p>Backspace error correcting</p> <p>Automatic centering</p> <p>Decimal alignment</p> <p>Block-move/copy</p> <p>Search</p> <p>Global search/replace</p>	<p>Automatic underlining</p> <p>Horizontal scrolling</p> <p>Vertical scrolling</p> <p>Word wraparound</p> <p>Document assembly/merge</p> <p>Automatic page numbering</p> <p>Repagination</p>	<p>Super-subscript printer</p> <p>File select</p> <p>Default format</p> <p>Stored form recall/display</p> <p>Forms input</p> <p>Stored multiple formats</p>
Additional software available on most personal computers in this price range:		
<p>Accounting software (spreadsheets, accounts receivable, disbursements)</p>	<p>Filing software (lists, matrices)</p> <p>Spelling verifier</p>	
<p>Price range \$3,000 to \$6,000</p>		

Standard features for easy comparison of dedicated word processors		
ELECTRONIC TYPEWRITER WITH TEXT-EDITING CAPABILITY		
<p>Components</p> <p>Integral keyboard/printer</p> <p>Optional single or partial-line display</p> <p>Optional storage media unit</p>	<p>Storage media</p> <p>Floppy diskette—standard</p> <p>8" diskette or mini-diskette</p> <p>Internal memory</p> <p>Magnetic card</p>	<p>Storage capacity</p> <p>Standard diskette: 75-100+ pages</p> <p>Mini-diskette: 15-40 pages</p> <p>Magnetic card: 5,000 characters</p> <p>Internal memory: varies</p>
System capabilities & functions (see Glossary for definitions)		
<p>Standard functions</p> <p>Automatic centering</p> <p>Automatic underlining</p> <p>Backspace error correcting</p> <p>Decimal alignment</p> <p>Delete</p> <p>Document assembly/merge</p> <p>Insert</p> <p>Word wraparound</p>	<p>Automatic page numbering</p> <p>Auto pagination/repagination</p> <p>Bidirectional printing</p> <p>Block-move/copy</p> <p>Column move/delete</p> <p>Default format</p> <p>Discretionary hyphenation</p> <p>File sort</p>	<p>Additional capabilities available on upper-price-range systems</p> <p>File select</p> <p>Forms input</p> <p>Global search and replace</p> <p>Headers/footers</p> <p>Highlighting</p> <p>Justification</p> <p>Search</p> <p>Super/subscript printing</p>
Optional equipment and software		
<p>Automatic sheet feeder</p> <p>Telecommunications</p>		<p>Forms tractor feeder</p> <p>Magnetic card reader</p>
<p>Price range \$700-\$10,000</p>		

STANDALONE OR SHARED-RESOURCE SYSTEM WITH FULL DISPLAY (CRT)		
<p>Components</p> <p>Keyboard</p> <p>CRT</p> <p>Disk storage device</p> <p>Printer</p>	<p>Storage media</p> <p>Flexible (floppy) diskette</p> <p>8" standard diskette</p> <p>Mini-diskette</p> <p>Micro-diskette</p>	<p>Storage capacity</p> <p>Flexible (floppy) diskette</p> <p>Standard diskette: 75-100+ pages</p> <p>Mini-diskette: 15-40 pages</p> <p>Micro-diskette: 75-100+ pages</p>
System capabilities and functions (see Glossary for definitions)		
<p>Standard functions</p> <p>Automatic underlining</p> <p>Backspace correcting</p> <p>Block-move/copy</p> <p>Centering</p> <p>File sort</p> <p>Decimal alignment</p> <p>Default format</p> <p>Delete</p> <p>Document assembly/merge</p> <p>Highlighting</p> <p>Horizontal scrolling</p>	<p>Hyphenation</p> <p>Insert</p> <p>Justification</p> <p>Page numbering</p> <p>Pagination</p> <p>Repagination</p> <p>Search</p> <p>Simultaneous printing/editing</p> <p>Super/subscript printing</p> <p>Vertical scrolling</p> <p>Word wraparound</p>	<p>Additional capabilities available on upper-price-range systems</p> <p>Bidirectional printing</p> <p>Column move/delete</p> <p>File select</p> <p>Footnote tie-in</p> <p>Global search and replace</p> <p>Glossary</p> <p>Headers/footers</p> <p>Spelling verifier</p> <p>Stored form recall/display</p> <p>Stored multiple formats</p> <p>Widow/orphan adjustment</p>
Optional equipment and software		
<p>Automatic sheet feeder</p> <p>Communications</p> <p>Forms tractor feeder</p> <p>Ink jet and laser printers</p> <p>Line and matrix printers</p> <p>Magnetic card reader</p>		<p>Math software</p> <p>Microcomputer software</p> <p>Optical character reader (OCR)</p> <p>Photocomposition interface</p> <p>Records processing</p> <p>Shared-resource capability</p>
<p>Price range \$6,000-\$26,000</p>		

Standard features for easy comparison of dedicated word processors (continued)		
SHARED-LOGIC SYSTEM		
Components Central processing unit Terminals with video display units (CRT) Printer Disk storage device	Storage media Winchester or other removable/ nonremovable rigid disk Flexible (floppy) diskette	Storage capacity Rigid disk: 250-700,000+ pages Standard diskette: 75-100+ pages
System capabilities and functions (see Glossary for definitions)		
Standard functions Automatic centering Automatic underlining Backspace correcting Bidirectional printing Block-move/copy Column move/delete Decimal alignment Default format Document assembly/merge Global search and replace Headers/footers Highlighting Horizontal scrolling Hyphenation	System capabilities and functions (see Glossary for definitions) Insert/delete Justification Page numbering Pagination Printer queueing Repagination Search Simultaneous input/output Stored form recall/display Stored format Stored multiple formats Super/subscript printing Vertical scrolling Word wraparound	Additional capabilities available on upper-price-range systems File sort File select Footnote tie-in Glossary Spelling verification Widow/orphan adjustment
Optional equipment and software		
Automatic sheet feeder Communications Compilers Forms tractor Ink jet and laser printers Line and matrix printers Magnetic card reader		Math software Microcomputer software Optical character reader (OCR) Photocomposition interface Records processing Supplemental storage devices
Price range \$14,000-\$65,000		

PART II

Developing and implementing a word processing system in the court: the systems approach

SECTION 1

Identification of problems and alternate solutions

Court managers or equipment salesmen all too frequently suggest a technological remedy to workflow problems and recommend a word processor or computer system before identifying the specific problems that are to be resolved by this technology. Today most court managers are familiar with the value of adopting a "systems approach" to evaluating court needs before making substantial technological or procedural changes in court operations. The systems approach emphasizes the need to identify and study the problems and define the goals and objectives before a solution is chosen.

Through the systems approach, judges, court managers, and analysts assess court needs and select the most appropriate manual or technological alternatives.¹ Each of the following steps in this approach is important in achieving good results and attaining goals. Many courts have failed to solve their problems or committed serious errors by omitting or condensing too many of the following steps:

- identification of problems and alternate solutions
- feasibility study
- cost-benefit analysis
- procurement process
- implementation and training
- ongoing monitoring, evaluation, and refinement

The rest of this monograph explains the nuances of how the systems approach can assist in assessment of requirements and implementation of word processing systems in the courts. Although most such systems are not so complex and costly as larger data processing information systems, the assessment of court requirements and the evaluation of systems under consideration are critical to their successful operation.

What word processors can and cannot do

Word processors will not, by themselves, resolve certain personnel and procedural problems. Word processors cannot significantly improve basic typing and secretarial skills, nor change the style, format, typing standards, or practices of court personnel. They cannot reduce demand for typing services—in fact, the introduction of word processors will substantially increase this demand—or reduce unnecessary paperwork, unreasonable demands, and inefficient clerical and correspondence practices; or reconcile inequitable distribution of workload or establish better work schedules.

1. For further information on planning and implementing an automated information system, see State Judicial Information Systems Project, *Automated Information Systems: Planning and Implementation Guidelines* (Williamsburg, Va.: National Center for State Courts, 1983).

In addition, there are several erroneous and misleading claims and benefits made about word processing equipment. It is said, for example, that typographical error rates will markedly decrease for all typing work. Instead, error rates for original typed documents will be about the same regardless of the type of equipment used; however, errors will be eliminated easily with proper text editing in the revision process.

Word processing technology will not substantially increase the productivity for original typed materials. In fact, productivity rates for original typed documents are about the same on standard typewriters or sophisticated word processors; typing productivity may substantially increase, however, for repetitive or revised materials.

Another misconception is that the greater the amount of revisions required for a document, the more advantageous the use of word processing equipment will be. Actually, word processing is practical and effective when minimum or moderate amounts of text or format revisions are required; when more than sixty percent of the text must be revised, it is just as productive to retype the entire document.

Another erroneous claim is that word processors are easy to learn and operate after a few days of training and minimal experience. In fact, the achievement of proficiency on most word processors usually takes several weeks.

Before word processing equipment is purchased or upgraded, the court should determine whether maintaining the status quo or making improvements in the current manual operations can adequately resolve its problems. The following alternatives should be examined:

- redistributing typing and case workload, reassigning personnel, and redefining job duties
- revising and consolidating forms and noticing procedures
- preparing and regularly using more effective techniques and materials, such as preprinted forms, pressure-sensitive labels, multipart forms, and window envelopes
- eliminating unnecessary or duplicative typing work
- establishing, monitoring, and enforcing typing production standards
- educating authors in better dictation and writing practices, and increasing training of clerical and secretarial personnel in basic administrative and typing skills
- sharing word processing resources when necessary, e.g., when volume and type of workload does not justify separate word processors for

individuals or departments but when the technology becomes cost-effective if groups share the system

When does the court need word processors?

The typical problems that might cause a court to examine the potential value of word processing technology include the following:

- substantial backlog in typing and printing of documents
- unacceptable turnaround time for the revision of documents
- poor quality of typed documents
- excessive amounts of retyping because of typographical and format errors or minor editorial changes
- cyclical typing production schedules
- need for excessive clerical or secretarial support, or excess typing and secretarial overtime
- increased typing and workload demands to be met in spite of budget or personnel restrictions
- extensive amounts of retyping the same or similar information for various notices, listings, or reports
- difficulty in accessing and extracting case information
- maintenance of large permanent documents, such as procedural manuals, that require periodic minor updating or reorganizing

The three most crucial questions in making the decision to obtain word processing technology are (a) whether the additional resources will sufficiently increase typing productivity to justify the extra equipment expenditures; (b) whether the typing and clerical staff can be trained to feel comfortable with word processors and believe the equipment will

substantially assist them; and (c) whether the system will actually produce, or provide access to, the necessary information and printouts within the desired time without too much effort.

In addition, the court should not acquire expensive word processing equipment unless various prerequisite conditions or anticipated goals can be met. The court should be able to answer in the affirmative most of the following questions.

Can the court reasonably estimate the typing volume to be produced?

Is there sufficient volume to keep personnel productive?

Does the court expect to limit or reduce the number of court personnel assigned to clerical or secretarial positions?

Does the court plan to reorganize and redistribute the typing workload?

Can the court directly project increased judicial or clerical productivity by introducing word processing?

Can the court project good utilization of the equipment?

Are most of the documents appropriate for efficient production on the word processing system, i.e., is there a large proportion of repetitive or revision typing?

Can the court cost-justify the acquisition of word processors within two to three years?

Does the court need or require documents of better quality produced more rapidly?

Does the court have time limits for the production of typed documents that are not met consistently?

Is the court sure that the word processing system will provide faster access and more accurate and timely information?

SECTION 2 Feasibility study

Word processing should be considered only if it meets a demonstrated and documented need. In some situations, word processing technology will not be a reasonable alternative. Court managers should not install word processors and then expect the court to find sufficient justification for their use after they are installed.

Many word processors currently installed in courts are either not used sufficiently or not adequate to handle the tasks assigned. Word processors are underused when (a) the machines are used less than five to six hours per day; (b) the text-editing and records processing functions are not understood or used; (c) the court personnel find the machines too

complex, burdensome, sophisticated, or unreliable to accomplish standard tasks; (d) court personnel do not have sufficient and appropriate typing and clerical work to utilize them fully.

On the other hand, a word processor being considered for court use must have the capacity to support all planned court tasks for which it is needed. If the court finds that its word processor has a slow response time for certain text-editing or records processing functions, or requires frequent changes or modifications in the storage medium used, the court has either been misled or did not adequately evaluate the particular word processor's functions and capabilities.

Formulating goals and objectives

The preliminary step in the systems approach is to state clearly the objectives and purposes of the technology as they relate to the overall goals of the court. Many systems fail, or succeed only partially, because they are designed to meet the wrong or unrealistic objectives, or because the objectives were not directly measurable.

An objective such as the "improvement of the administration of appellate justice" provides little direction for the selection of a word processing system. More precise objectives should be stated about the anticipated impact of word processing, such as "printing and dissemination of opinions within twenty-four hours," "the production and mailing of all notices and orders within twenty-four hours of issue," and "the doubling of the production of

printed and typed court documents." (Appendix B contains an excellent example in the Request for Proposal for the Rhode Island Supreme Court Information System in the section entitled "Performance Requirements.")

On the other hand, more crucial court objectives, such as reducing delays caused by continuances, or removing cases from the court docket when there is no progress after one year, are measurable and attainable objectives, but usually difficult to attribute precisely to word processing automation.

Ordinarily, all the court's objectives cannot be completely formulated at the beginning of the study. Often they will change. As new conditions are encountered during the study, the objectives may have to be modified or expanded.

Gathering and analyzing information

Once the general objectives have been defined, all relevant information about how the court works should be gathered. This is accomplished by interviewing personnel, collecting and analyzing records and correspondence, evaluating facilities, and monitoring the workflow and distribution of documents. Statutes and court rules must be examined to determine the legal requirements pertaining to the production and dissemination of court records and documents. Other constraints that may affect the use of word processing systems or alternative automated systems must also be examined. For instance, if a court is funded by a county or state that has an extensive data processing system, it is unlikely that funds will be approved for a word processing system to perform extensive case tracking. The court may need to restate goals and objectives in more specific

and more practical terms, such as the need for status and tickler reports and other notices more promptly or more economically than the large data processing system produces them.

The court also needs to collect other types of information in order to determine the need for word processing technology.

What are the number and location of clerical and secretarial personnel who are now or might be using word processors?

What typewriters and word processing equipment are being used, and how efficiently are they used?

What are the paperflow and workflow patterns and what tasks might better or more efficiently be accomplished on word processors?

What are the types of documents (letters, orders, notices, reports, case management information) being

prepared, and what other types might be prepared on word processors?

In what form (handwritten or typed) is the original material that will be entered or revised on word processors?

What additional administrative tasks and duties (such as filing, answering telephones, researching dockets) are performed by personnel who might become word processor operators, and how and by whom will such tasks be performed after the installation of word processing equipment?

What are the volume and typing characteristics of each type of document produced—i.e., what is the volume and the relative proportion of the total typing workload for each type of document?

What are existing and anticipated turnaround

Data collection instruments

One desirable approach is to collect and analyze the typed and printed documents that might be produced on the word processing system. The court should determine the volume and frequency with which each type of document is produced, who receives the documents, and how they are transmitted.

The court must gather the information necessary to prepare a flowchart, matrix, listing, and narrative to help describe the functions performed by the court, the types of information needed to produce documents, and the sources and entry points of the information. (See Appendix B for an example of the kind of information needed.)

If it is uneconomical and too time-consuming for the court to complete a detailed work measurement study to evaluate the existing typing and clerical workload and document flow, reliable and valid

times, the typical length of each type of document, the proportion of the text needing revision for each type of document, the response time required for reply to inquiries or production of reports for case records?

What are the existing typing production (total volume) and the productivity (pages or lines per day) rates or standards for each type of document, and what are the existing and anticipated work schedules?

What are the anticipated quality standards desired by court management?

To what extent will the court administration be willing to change work schedules, typing priorities, and time demands, or restructure the office or department in terms both of office space and of personnel duties and responsibilities?

information and statistics to complete a less detailed analysis of needs should at least be obtained. Two alternative approaches are suggested; the first should be sufficient, but the second, while more time-consuming, provides additional validity checks.

(1) Each typist and clerk completes a fill-in form (see Appendix A) containing pertinent information about each document produced.

(2) Each secretary or clerk reproduces an additional carbon or photocopy of each document completed, with the preparation time noted on each extra copy. This process should be required for two to three weeks during a typical period (avoid major holiday weeks or summer vacation periods). These techniques will permit the court analyst or manager to tabulate and analyze the word processing requirements and statistics needed.

SECTION 3 Cost-benefit analysis

Experience with the use of word processors has shown that with the proper selection of equipment, word processing technology can provide significant benefits to courts by increasing productivity and administrative effectiveness. The extent to which these benefits offset the increased costs, however, particularly for equipment and supplies, has seldom been ascertained.

Court managers must weigh the importance of improving efficiency and alleviating existing problems against the estimated costs and the necessary new administrative procedures. The more critical a problem or the greater the potential improvements, the more desirable a solution even at a higher cost. Each court must balance the value and benefits of making a change against the costs and organizational adjustments required. This process is called cost-benefit analysis.

The objective of a cost-benefit analysis is to identify from among various manual and technological alternatives those approaches that offer the best combination of benefits or potential savings at the least cost over a prescribed period of time.¹ The purpose is to quantify benefits and relate them to the costs in a meaningful way. In addition, the court must be aware that not only the costs but the importance of

the benefits may change over time. Costs can be identified and evaluated with relative ease, normally expressed in dollars. The most rational method is to compare potential benefits with costs on some mathematical basis, e.g., in the form of ratios (benefits to costs) or a subtraction formula (benefits minus cost equals net value: gain or loss). As previously discussed, some intangible benefits are difficult to quantify and relate to financial expenditures. However, some comparisons can include intangible benefits if the court is willing to develop a weighting scheme and rate the importance and potential impact of these benefits.² This approach is based on the theory that any benefit can be ranked according to its relative importance to a decision-maker.

Only when current costs and efficiency are weighed against the corresponding costs and effectiveness of the word processing system will the court manager have a rational basis for deciding whether to obtain the equipment, and if so, which equipment choices are most cost-effective. Minimally, the court should compare total costs of the existing approach (whether manual or an existing word processing system) to costs and benefits of the proposed word processing alternatives.

Cost and benefit categories

There are four basic categories to analyze when completing a cost-benefit analysis: fixed costs, variable costs, tangible benefits, and intangible benefits.

Fixed costs

Either one-time or recurring fixed costs remain relatively constant throughout the useful life of the system or the period the analysis covers. These expenses are relatively static regardless of work demands or production variations. The following is a list of the fixed cost items that should be calculated.

- word processor(s) including peripherals and accessories (if purchased, one-time costs; if leased or rented, recurring costs)
- word processor(s) maintenance fee (recurring)
- space and related services—light, electricity, etc. (recurring)
- office furniture and accessories (one-time)
- site preparations and equipment installation charges—electrical outlets, shipping (one-time)

1. A comprehensive discussion of cost-benefit methodology for the courts, including case studies and techniques for project costs and quantifying benefits, can be found in State Judicial Information Systems Project, *Cost-Benefit Methodology for Evaluation of State Judicial Information Systems* (Williamsburg, Va.: National Center for State Courts, 1979).

- personnel—court staff assigned full time to word processing operations (recurring)
- staff training (recurring); additional costs for introductory training
- acquisition of additional software or equipment modifications (although these are fixed costs once decided on, the court has discretion as to whether to incur these expenses)

Variable costs

These are usually more difficult to identify and accurately calculate. They vary depending on actual usage. Variable costs are frequently overlooked but can be substantial expenditures and should be included in any cost evaluation. The following variable cost items should be calculated:

- word processing supplies: ribbons, print wheels, continuous-form paper, floppy disks
- personnel (court staff operating the equipment on a part-time or on-demand basis)

2. *Ibid.* See also: *Court Reporting Alternatives for Connecticut* (Williamsburg, Va.: National Center for State Courts, 1979).

Tangible benefits

Direct reductions in costs, particularly manpower reductions, where savings can be projected with some degree of certainty because of the introduction of word processing technology, are tangible benefits. Savings can be translated into specific quantifiable values or weights and easily factored into a general cost-benefit equation. The following are examples of tangible benefits:

- reduction or limiting of future growth of secretarial and clerical staff
- reduction or elimination of paperwork or overlapping documentation and cross-referencing (e.g., multiple notices, reports, docket books, indices)
- reduction in case processing time and document preparation time by judges, law clerks, and higher-echelon administrative staff
- reduction in access time and manpower because more precise, accessible, and accurate information is available
- anticipated increase in workload which can be handled by judicial personnel

- greater productivity of court-generated documents (notices, calendars, jury listings)

Intangible benefits

These are difficult to quantify and to assign specific monetary values. Frequently these types of benefits may be just as valuable as financial benefits, but they should not substitute for some cost assessment of the alternatives being evaluated. Sometimes a quantitative scoring schedule can be employed to translate and compare intangible and tangible benefits. Examples of intangible benefits are the following:

- improvements in the quality of court administration and the quality of typed documents generated by the court
- improvement in the efficiency and morale of court personnel
- enhanced responsiveness and image of the court to the public as being more efficient, accurate, and responsive to public needs
- assistance and savings to other government agencies (district attorney, public defenders, law enforcement, legislature)

Cost evaluation methodology

Traditional text editing and forms generation

Costs must be evaluated over the projected life span—not just the initial start-up and implementation expenditures—for the word processing applications, and compared with the existing operations or alternative approaches under consideration over the equivalent time period. Therefore, all direct and indirect, one-time and recurring, fixed and variable cost estimates should be included in a composite cost assessment of each of the alternatives under consideration.

One of the major cost elements, yet one of the most elusive to calculate precisely, is personnel costs. The unit-of-cost item (e.g., secretaries and clerks) for which costs will be computed ("person" hours connected to salaries and hours of word processing production) should be established at the outset. These costs are computed by finding the product of the dollar rate per unit-of-cost item and the number of cost items.

In developing a separate set of costs for each alternative, costs for the current, usually manual, operation are calculated first. Then costs for the other alternatives can be developed using the current system costs and production as a standard.

The relationship between productivity and cost represents the cost-productivity of a word processing system. Since word processor productivity varies substantially, depending on the application and equipment employed, no single cost-production ratio can be derived.

Either a cost per page or a cost per document may be used as a primary measure of cost-effectiveness.

These figures should be calculated for each word processing application (opinions, notices, records processing) using an anticipated volume of documents to be produced by the court. Analyzing and cost-justifying each major application will help the court both to understand which applications will be most cost-effective and to establish priorities in the implementation of word processing applications.

If a court intends to use word processing only for traditional word processing activities (text-editing and printing, standard list processing, and form-fill-in applications), the following simplified method of cost-benefit analysis may be useful. (An assumption is made that the only crucial benefit is in the speed and volume of production of the documents; quality is equivalent to that of an electric typewriter, and other tangible or intangible benefits are of minimal importance.) For each manual and word processing alternative under consideration, the court should make the following calculations:

STEP 1
Calculate the total estimated number of pages produced annually for each major category or application.

STEP 2
Calculate the time (proportion of an hour) required to produce a page of output for each major category or application (typing, proofing, printing, re-editing).

STEP 3
Calculate the total weighted printed output—the sum of the annual volume (Step 1) multiplied by the

amount of time per unit of production (Step 2) of each major category or application.

STEP 4
Tabulate the personnel expenditures needed to service both the manual and word processing alternatives—the sum of the number of persons multiplied by the average salary and benefits multiplied by portion of worktime for each personnel classification group plus any contractual services.

STEP 5
Tabulate the annual nonpersonnel expenditures.

STEP 6
Calculate total expenditures (personnel plus non-personnel) divided by the total weighted printed output (Step 3). This provides a comparative value per page of printout.

Worksheets for cost analysis and benefit analysis follow.

COST ANALYSIS OF WORD PROCESSING				
Personnel costs	Manual operation		Word processing	
	Number of people	Average annual salary plus benefits	Number of people	Average annual salary plus benefits
Secretarial				
Development and training phase		\$ _____		\$ _____
Regular operations	_____	_____	_____	_____
Clerical				
Development and training phase				
Regular operations	_____	_____	_____	_____
Supervisory				
Development and training phase				
Regular operations	_____	_____	_____	_____
Totals		\$ _____		\$ _____
Contractual services				
Development and training phase		Annual fee		Annual fee
		\$ _____		\$ _____
Nonpersonnel costs			Annual expenditures	
Forms and documents			Manual	Word processing
Printing and duplication			\$ _____	\$ _____
Related supplies			_____	_____
General office equipment and supplies			_____	_____
Machines			_____	_____
Typewriters, duplicators			_____	_____
Word processors (other than storage)			_____	_____
Operation and maintenance			_____	_____
Information storage			_____	_____
Files, cabinets, etc.			_____	_____
Computer storage (disks)			_____	_____
Travel costs (for demonstrations, comparisons, training)			_____	_____
Postage			_____	_____
Space (square feet x annual \$/sq. ft.)			_____	_____
Other contractual services (installation, shipping, evaluation)			_____	_____
Ongoing vendor support			_____	_____
Program and data conversion			_____	_____
Insurance costs			_____	_____
Site preparation			_____	_____
Electrical: air conditioning, heating, humidity control, wiring, and power supply			_____	_____
Space preparation: installation of walls, ceilings, bracing, adequate storage facilities			_____	_____
Miscellaneous (specify)			_____	_____
Total costs		\$ _____	\$ _____	\$ _____

BENEFIT ANALYSIS OF WORD PROCESSING

Documents produced	Average number of pages	Frequency of production (annual)	Annual total pages of production	Time per page: manual production	Time per page: word processed	Potential increase in pages produced with word processing
Reports						
Opinions						
Memoranda						
Lists						
Indices						
Schedules						
Dockets						
Notices (list types)						
Statistical reports (list types)						
Other (specify)						
Totals						

Major types of inquiries	Annual number of inquiries	Average response time	
		Manual	Word processing

Tangible & intangible benefits	Weight	Rating		Score (weight x rating)	
		Manual	Word processing	Manual	Word processing
Reliability of service					
Accuracy of information					
Accessibility of information					
Timeliness of information					
Personnel time (judge)					
Personnel time (clerical and secretarial)					
Personnel time (other court administration)					
Quality of court services					
Quality of documents					
Space requirements					
Budget requirements					
Flexibility of use of personnel caseloads					
Management of caseload					
			Sum of Score		

Word processing used for records processing in courts

Since records processing encompasses so many possible applicables, methods of production, and measures of productivity, it is very difficult to quantify potential productivity gains accurately. Output may be measured in ways such as the number of printed pages or forms, the number of responses and inquiries, or the timeliness and accuracy of information. Some applications are comparable to providing the standard fill-in forms and letters discussed earlier in this section; other applications require the development and maintenance of a large database with extensive revisions but minimal production of printed

listings and forms.

It is also difficult to provide general estimates of potential cost savings. The court should estimate and compare the costs for the existing operation with the alternative word processing system options under consideration and with more sophisticated records processing systems on minicomputers. Lists of the key fixed and variable cost items that need to be tabulated are provided earlier in this section (see "cost and benefit categories"). The court must be particularly careful to estimate all appropriate direct and indirect personnel costs associated with any records processing operations.

SECTION 4 Procurement process

The usual method of obtaining word processing equipment should be through a request for a proposal (RFP). If a court is planning to acquire only one or two inexpensive word processors for a few straightforward word processing applications, a detailed RFP and extensive evaluation process may be un-

necessary. Too frequently, however, courts have acquired word processing systems by "sole source" procurement without knowledge of the available alternatives and capabilities, and have either obtained poor performance or paid more than necessary for the resources provided.

The RFP process

While the RFP process may seem time-consuming and costly, this expenditure is minimal compared with the penalties of installing an ineffective or dysfunctional word processing system.

Some of the reasons for requiring an RFP are

- that vendors may propose better solutions than those envisioned by the court;
- that the number and types of word processors are so diverse and so rapidly changing that it is impossible for the court to keep current;
- that RFPs solicit more than just equipment: e.g., software support, training programs, and maintenance services;
- that comprehensive evaluation of the more attractive offers permits the court to compare and identify objectively the more effective and cost-beneficial word processing systems;
- that better or more flexible terms and extra services may be available in a competitive solicitation;
- that trade-offs can be obtained and better evaluated, even though no single machine has all features and functions that may be sought;
- that sometimes production and functional requirements can be met in several ways, so that negotiations and modifications are necessary.

The essential elements of an RFP for word processors are comparable to the acquisition of other automated electronic equipment. (See Appendix B for an example of an RFP. A detailed model of an RFP can be found in *Automated Information Systems: Planning and Implementation Guidelines*, cited in bibliography.) Here, we shall discuss the entire RFP process and evaluation procedures, emphasizing those elements that are critical for the proper selection of a word processing system.

The RFP should be distributed to as many vendors as have sales and maintenance offices within or near the court's jurisdiction as possible. The court's word processing evaluation and user committee should actively participate in the entire RFP process—preparation, evaluation, and selection. The process consists of the following four steps: identifying selection criteria; classifying criteria according to importance; evaluating each vendor's proposal; and comparing and selecting the vendor and model.

Identifying selection criteria

Development of a list of criteria or elements to be used in the selection process will help the court to focus on those elements that are crucial to a well-informed, unbiased decision. It will inform the vendors of the importance of the various functional capabilities and production capacities required so that they can offer the most appropriate system. This list will also serve as a basis for objective evaluation of the vendors' proposals and demonstration of the equipment.

Classifying criteria according to importance

After the criteria are specified, a weighting scheme should be agreed on by the review committee. Both mandatory and desirable criteria must be considered. Mandatory requirements represent the absolute or minimum requirements that the vendor's proposal must meet in order to be considered. Following are some requirements that should be considered:

- hardware: number of CRT work stations, type of printer, storage medium and capacity
- software: word processing text input and editing features (see standard functions listed in the glossary)
- additional capabilities of the hardware and software: CRT display features (e.g., characters per line, lines per screen), printer features (e.g., interchangeable fonts, top-of-form control, and queuing of multiple documents to be printed)
- maintenance and service response rate
- miscellaneous: space limitations, security and access control, existing site facilities, additional peripheral equipment or capabilities

The inclusion of mandatory requirements in the RFP is beneficial to both the court and the vendors. The court benefits by eliminating proposals that cannot possibly satisfy its needs, while the vendors benefit by avoiding the preparation of a costly proposal and by being able to offer the most appropriate models and equipment configurations among a variety of word processing systems in a particular manufacturer's line. *A court that waives its mandatory requirements in response to sales ploys is not prepared to begin the bidding process.*

Desirable criteria (as opposed to mandatory) may

be evaluated on a relative scale. The court should determine how important each criterion and sub-element is, i.e., how much weight should be given to each factor, using a scale such as the following:

Degree of importance	Weight
Extremely important	9
Very important	7
Moderately important	5
Not very important	3
Minimally important	1

Obviously, the criteria and their assigned weights constitute subjective judgments. The evaluators should agree on the terminology and the weights before the formal evaluation of the vendor proposals is begun. The vendors should not be informed of the details of the criteria to be evaluated or of the weightings. The RFP should generally list the classes of criteria under consideration, but not other evaluation details.

Examples of the application of this rating procedure are shown below.

Criteria description	Weight	Interpretation
Automatic footnoting	7	Very important
Appearance	2	Minimally important
Average response time in records file	9	Extremely important

Evaluating the vendor's proposals and demonstration

Each court will develop its own criteria and weighting scheme based upon its unique demands and priorities. The mandatory requirements are judged first.

Failure to meet these absolute specifications should automatically eliminate the vendor's proposal. A vendor should be given an opportunity to clarify his statement if interpretation is in question, but the court's definition and terminology must be met. Obviously, all mandatory features and capabilities must be well understood by the court and by the individuals involved in preparing the RFP. This will permit the court to answer vendors' requests for clarification and will avoid misunderstanding and confusion.

The specifications and definitions for desirable criteria can be less precise. Each element is judged according to the degree of desirability or conformity that is shown in the vendor's written or demonstrated response. Points are awarded according to preestablished guidelines and a consensus of the evaluation committee.

Benchmark testing of proposed system

The court should never rely solely on sales literature, salesmen's explanations and representations,

or the submitted vendor responses as the basis for selecting a word processing system. Any manufacturer seriously interested in responding to the request for proposal must be prepared to demonstrate the word processor's capabilities to the court's evaluation committee.

This demonstration of a vendor's product must not be just the standard or "canned" presentation of the system; rarely does a vendor's controlled demonstration fail, or show the weaknesses and possible defects of the equipment and software programs.

When evaluating word processing systems, the court should include an extensive "benchmark" performance test that has been specified and developed by the evaluation committee. Actual documents from the court, to be handled by the word processor, should be in this benchmark test of the proposed system. This approach permits the evaluation team to assess each manufacturer's capabilities on comparable performance standards and to understand the software variations and alternative procedures offered by each manufacturer. This type of test demonstrates the strengths and weaknesses of the word processing systems offered.

The ratings for each vendor conducting the benchmark test should be assigned according to some rating scale such as the following:

Excellent	8-10
Good	5-7
Fair or poor	1-4

Each committee member should rate each proposal independently on standard evaluation forms after reviewing the proposal and observing the mandatory demonstration. Each evaluator, exercising his or her independent judgment and area of knowledge, should prepare a worksheet of the type on page 31. After all manufacturers are evaluated, the committee should tabulate and compare the ratings. Where ratings for a particular word processor show substantial differences, the entire committee should discuss and clarify why there are such discrepancies. Usually these discrepancies will be resolved so that one or a few word processors are the most highly rated. The highest-rated vendor should normally be chosen. If several are very closely rated, however, the evaluation committee should further review the results and reach a group consensus on the most appropriate choice.

The independent research and users' ratings found in various technical magazines and reports can furnish additional information. Of particular value is the experience of other courts within the region. This type of information may be helpful in verifying the evaluation committee's findings, but should not be used as the primary resource. There appears to be no relationship in the word processing industry between a vendor's size or public image and the quality or effectiveness of his word processing equip-

ment in serving judicial needs.

In the final analysis, the court should acquire a word processing system

- that can be adequately serviced within a few hours, has a good or excellent reliability record, requires few repair calls, is responsive, and has competent maintenance personnel;
- that has been demonstrated to meet or exceed all the performance requirements established by the court;
- that the entire evaluation committee or a great majority of it feel comfortable with and are confident will meet both the operators' and management's demands; i.e., that the equipment will produce the desired outputs and results within a reasonable or prescribed time frame;
- that will not be too cumbersome to learn and that will facilitate expeditious production of documents and be easy to operate;
- that is within the budget allocation and can be shown to be reasonably cost-effective and cost-beneficial for the principal applications considered.

Selecting the vendor

Before a contract is signed, final clarification of terms and conditions should be made. All assurances of machine performance, delivery dates, maintenance, and other terms should be put into writing. Furthermore, it should be specified that the vendor's proposal constitutes part of the contract, because the decision was based on the vendor's proposal.

Contract content

Many court users will ask a very basic question: *Should we sign the vendor's standard contract?* The answer is, *No—not until it has been modified to meet the terms and conditions required by the court.* Standard vendor contracts generally serve the vendor's best interests, not the court's. Sample contract terms that the court should detail are shown on page 33.

The court should conduct final negotiations with the chosen vendor to obtain the best possible terms and conditions. This is not to say that other vendors may change their proposals and begin negotiations. That would be unethical. Rather the court and the best bidder should resolve any remaining difficulties. Without such resolutions, the court may have no choice but to reject all offers and to initiate the bidding cycle anew.

Method of acquisition

There are several methods of acquiring word processing equipment: outright purchase, rental (usually a short-term contract of one month to one year with a 30-day cancellation clause; maintenance included); lease (usually a long-term—two or more years—contract through "third-party" lessor, requiring sep-

arate maintenance contract with manufacturer); or lease with option to buy (the court has the option to apply portion of lease payments towards outright purchase; requires separate maintenance agreement). The court should tabulate all costs (direct and indirect) over the expected life of the equipment (usually four to eight years) for a realistic cost comparison of the various acquisition methods.

While the acquisition cost of the word processor is easy to calculate, several "hidden" costs must also be figured into the cost comparison; e.g., maintenance, authorization charges, costs of spending money now rather than at a later date, word processing supplies and accessories, and anticipated equipment modifications and software enhancements during the estimated life span. Various tax advantages and trade-offs among the acquisition methods are usually not germane to the courts.

It will generally be advantageous to purchase word processors when (a) only a few low-priced word processors (under \$6,000-\$7,000) systems are to be acquired; (b) a court has extensive experience with word processors and is assured that they can adequately meet all existing and projected word processing needs without additional equipment or software enhancements; (c) the court plans to rent or lease the equipment for more than three years.

It will be advantageous to rent or lease with an option to purchase when (a) the court has no experience with word processing equipment; (b) the court needs additional word processing capacity for a short period; (c) the court cannot sufficiently evaluate whether the word processor has adequate capacity and performance capabilities (this is particularly important for records processing functions that sometimes cannot be fully analyzed and demonstrated during the RFP and benchmark assessment); (d) funding sources are limited; (e) a substantial number of word processors or a large shared-resource word processing system is obtained; or (f) the manufacturer cannot provide all the desired hardware and software capabilities.

The court must be particularly cautious when a manufacturer wants to sell equipment at substantially reduced prices. This is sometimes an indication that the particular equipment or model is outdated or that new, more competitively priced and more efficient equipment will soon be introduced. A comprehensive survey of the market and current prices should be completed.

Once a court makes a substantial purchase of word processing equipment, this initial acquisition often necessitates additional acquisitions from the same manufacturer to avoid conversion costs, staff retraining, and machine incompatibility. Therefore, the court should thoroughly explore and assess the word processing market before any substantial purchase is made.

EXAMPLE OF EVALUATION WORKSHEET

Vendor _____

Evaluator _____

Date _____ Score _____ Maximum _____ Vendor score _____

MANDATORY CRITERIA*

Items	Criterion met		Comments
	Yes	No	
Printer speed	_____	_____	_____
Number of lines displayed	_____	_____	_____
Document-oriented files	_____	_____	_____
Footnote tie-in	_____	_____	_____
Number of fields available in data file	_____	_____	_____

DESIRABLE CRITERIA*

Items	Weight	Score	Weight score	Comments
Applications (benchmark)	_____	_____	_____	_____
Manuscripts	_____	_____	_____	_____
Standard forms and letters (text assembly)	_____	_____	_____	_____
Forms fill-in	_____	_____	_____	_____
Memoranda/correspondence	_____	_____	_____	_____
Statistics/tabular material	_____	_____	_____	_____
Lists (record processing)	_____	_____	_____	_____
a. Case information	_____	_____	_____	_____
b. Inventory	_____	_____	_____	_____

Summary

Ease of operation	_____	_____	_____	_____
Text (data) entry	_____	_____	_____	_____
Text editing	_____	_____	_____	_____
List processing updates	_____	_____	_____	_____
Printing	_____	_____	_____	_____
Media handling	_____	_____	_____	_____

Support services

	Weight	Score	Weight score	Comments
Service, training, and support	_____	_____	_____	_____
Delivery schedule	_____	_____	_____	_____
Availability of service personnel	_____	_____	_____	_____
Technical support	_____	_____	_____	_____
Training manuals	_____	_____	_____	_____
Training program	_____	_____	_____	_____
Equipment reputation and user ratings	_____	_____	_____	_____
Strength and reputation of vendor	_____	_____	_____	_____

Function/features/capacities

	Weight	Score	Weight score	Comments
Display quality	_____	_____	_____	_____
Printout quality	_____	_____	_____	_____
Storage capacity	_____	_____	_____	_____
Screen size	_____	_____	_____	_____
Scrolling features	_____	_____	_____	_____
Display features	_____	_____	_____	_____
Printer features	_____	_____	_____	_____
Machine dialog	_____	_____	_____	_____
Input features	_____	_____	_____	_____
Automatic editing features	_____	_____	_____	_____
Document assembly features	_____	_____	_____	_____
Search, delete, move capabilities	_____	_____	_____	_____
Arithmetic capabilities	_____	_____	_____	_____
Records processing capacities	_____	_____	_____	_____
Records processing capacities (sort, select)	_____	_____	_____	_____

*Only those applications, features, and processes pertinent to the court's objectives and needs should be included in the evaluation. The items and descriptions listed are for illustrative purposes.

EXAMPLE OF EVALUATION WORKSHEET (continued)

Overall best features and capabilities: _____

Overall weakest features and capabilities: _____

SAMPLE CONTRACT TERMS

Section	Purpose
1. Term of contract and contract termination	To present the contract duration and conditions of early termination.
2. Installation and delivery date	In addition to general statements about defining delivery dates, riders detailing the program schedule should be prepared.
3. Liquidated damages	To present damage assessments for delayed installations or late performance. A contract without such remedies for vendor failures is an invitation to abuse. Terms should be carefully detailed.
4. Standard of performance and acceptance of equipment	To present the procedures and conditions under which equipment will be accepted before payments will accrue. Performance levels should be carefully detailed. Equipment that does not meet acceptable performance levels over an acceptable period should be replaced by the vendor.
5. Terms of use	To detail how various levels of use are defined and charges assessed (e.g., extra use charges).
6. Maintenance of equipment	To define and assess different maintenance categories (e.g., on-call and on-site maintenance, preventive and remedial maintenance, principal period of maintenance, replacement parts). Also to detail the maintenance requirements and remedial actions.
7. Substitutions, additions, and conversion	To provide the basic terms under which equipment may be substituted or added to the system. It is important to provide for substitution. With rental, a major problem has been vendors' refusal to permit users to update their systems (e.g., to replace an outdated, expensive unit with modern, less expensive units).
8. Major field modifications	To detail the terms during any field modifications by the vendor.
9. Alterations and attachments	To detail the conditions under which users may alter equipment. These agreements protect the vendor's interests.
10. Program testing and compiling time	To describe the terms of vendor testing and program compiling.
11. Training and technical services	To detail the terms of training and technical services (e.g., training courses, technical skills, costs) provided by or available through the vendor.
12. Site preparation	To detail site preparation terms. Usually the vendor provides specifications (after the user's request), and the user must bear the cost of meeting them.
13. Transportation, installation, relocation, and return of equipment	To detail the terms and conditions of equipment delivery, installation, relocation (if any), and removal.
14. Risk of loss or damage, and contractor liability	Usually to relieve the user of (and assign to the vendor) liability for most damages not due to user negligence or equipment modifications.
15. Supplies	Usually separately contracted, but must meet vendor specifications.
16. Title	To detail ownership or transfer of title.
17. Purchase option	To detail any provisions for applying rental credits toward a purchase price. Usually part of proposal.
18. Incorporation of proposal	The vendor's proposal (response to RFP) should be made part of the contract.
19. Warranty	To detail any warranty. Obtaining a warranty is recommended.
20. Taxes	To detail tax payments, if any.
21. User's obligation, approvals	To explain user's funding procedures. A few courts will be constrained by being unable to commit money over extended periods of time (e.g., unable to make long-term legal commitments).

Documentation of the system

It is easy to plan, install, and implement a word processing system without documenting it. Doing so takes less time and money, but vendor documentation makes it possible for new staff to understand the machine and the workflow, and court management to modify, refine, and expand the system, if necessary. If straightforward and standard word processing applications are performed, the documentation can be more limited than would be needed for a court developing a detailed case tracking and notification system. Regardless of the type and amount of word processing equipment obtained, some vendor documentation should be required. Certain documentation should be completed and kept available.

General system description

An overview of the system for management-level comprehension and general technical description of the equipment and capabilities of the system will be needed.

Implementation plan

The impact of the word processing services on internal court operations and the anticipated changes in the services provided to both court and noncourt users with the introduction of this technology should be described.

Operations manual

This provides word processing personnel with a description and detailed examples of the court workflow and work products, input forms, and output documents; guidelines for work priorities and anticipated deadlines; and processing procedures needed to use the equipment most effectively.

Users manual and training procedures

Responsibilities, actions, frequencies, and special instructions should be defined so that court personnel can use the manual both as a training guide and a comprehensive reference manual. These materials can be used in conjunction with the vendor's standard training manual; however, the court should not expect to rely totally on the vendor's manuals.

Detailed system design

This describes the equipment's functional requirements, design characteristics of the applications (the data elements, inputs, outputs, data files), and software program specifications. (Note: This documentation is required only if very complex word processing applications such as list processing are included in the word processing operations.)

SECTION 5 Implementation and training

Most word processing systems do not require any major remodeling of existing court facilities or renovation of offices. Nevertheless, the court should

carefully review and prepare plans for the installation and placement of all components of the word processing system.

Site preparation

There are two major environmental considerations in the preparation of court facilities: (a) appropriate office conditions that meet the technical specifications for the proper installation and operation of the word processing equipment; and (b) desirable office conditions that provide adequate comfort and ease of operation for personnel using the word processing system.

Unlike many large computer systems, word processing systems do not normally require extensive and expensive office and building modifications such as additional air conditioning, raised floors, fire protection, expanded power supplies, and a supply room. The court must be careful to review vendor specifications, however, and be sure that the word processing area where the system will be located remains within reasonable temperature and humidity ranges. High temperatures will adversely affect both court personnel and the reliability of the equipment. Low humidity, a particular problem in colder winter climates, can cause static electricity that may harm the equipment and cause the loss of information in the word processor. Appropriate placement of the equipment or the installation of small air conditioners and static mats will help alleviate such problems. Some word processors may require dedi-

cated power lines, special outlets, or higher amperage; electrical fluctuations can seriously damage the equipment. Word processing equipment should not share an electrical line with other equipment requiring heavy electrical power, such as air conditioners, elevators, or photocopy machines.

The placement of the equipment is also particularly important for the operator's comfort, efficiency, and productivity. Lighting should provide a sufficient level of illumination and brightness without producing undue glare on the CRT screens. The keyboard and the CRT should be placed at the proper height and angle.

Another important consideration is ease of access to the work stations, storage units, and the printers, particularly when court personnel share the work stations or are not permanently located at a word processing station. The amount and placement of the wiring and outlets will be important. The location and proximity of the work station to the printer(s) must be considered because of the noise level of the printer, particularly if the printer is used heavily (several hours each day). Unless it is located a substantial distance from court personnel (which is not usually desirable), or is only moderately used, an acoustical hood is usually required.

Conversion

Unlike data processing, the implementation of word processing normally requires only a few months. The court should appoint a qualified person to serve as project manager for the installation of the equipment, the training of personnel, and the conversion to word processing applications. Normally, an individual involved in the feasibility study and the systems selection should be assigned as the project manager or supervisor.

A smooth conversion of the existing procedures to word processing is not only desirable from a cost standpoint but is also the first direct encounter most users will have with word processing. Prompt results with minimal errors will assure continuing enthusiasm and support for the word processing system.

There are three possible conversion approaches.

Direct conversion

The installation and implementation of the word processing system and discontinuation of the old manual approach take place simultaneously. This

approach is recommended only if the intended applications are not currently being performed. The advantage of direct conversion is the relatively low cost of implementation. The primary disadvantages are that a working system is abandoned before personnel are properly trained and that the equipment and functions are still unproven. Rarely should this approach be taken.

Parallel conversion

The old method operates simultaneously with the word processing system for a specified period of time. With parallel conversion, the new operating procedures and their resulting outputs can be compared with the old. Personnel can learn the system and can identify technical faults and procedural problems while still having a backup or avoiding severely reduced services. The major advantage is the protection it affords against failure of the new system. The disadvantages include additional costs of operating two systems simultaneously. Most word processing

applications should be implemented in the parallel mode, with dual operations lasting for not more than three or four months after the installation of the equipment.

Modular conversion

This refers to the implementation of self-contained applications or subunits of the applications, such as indexing or notice preparation. This approach is particularly desirable if a major records processing system is being developed on a large shared-resource word processing system. The implementation of the modules may involve either direct or parallel conver-

sion. One advantage of the modular approach is that it permits extensive testing before introduction of the next major function. The disadvantage is that the conversion period can be lengthy and costly.

Whichever conversion procedure is followed, the court should undertake a detailed evaluation of the installation of the system, to determine the level of accuracy, timeliness, and usefulness of the information to the users; the actual development costs; the differences between the projected and the actual schedule; adherence of personnel to established manuals and procedures; and adequacy of the documentation.

Training

During the initial four to ten weeks after the installation of the word processing equipment, the court should expect a substantial decrease (typically 10 to 25 percent) in secretarial and clerical typing productivity for most applications. These temporary reductions are caused by the time court personnel must take to learn and understand word processing codes and operational procedures and to adjust to the use of new technology and new procedures in handling paper-flow. In other words, a manufacturer's initial training is usually insufficient, and personnel can only adjust to the machinery by personal experience. If production and productivity rates do not substantially rise after a few months, however, the

court must closely examine the causes. Examples of potential causes for low productivity may be one or more of the following: improper or poor vendor training, unreliable equipment, inadequate management of the word processing area, inadequate procedures, unsatisfactory word processing functions. Under such circumstances, the original contract or agreement should require the vendor to provide additional or supplemental training at no or minimal cost. Another approach is for the court to specify in the contract the withholding of full payment until adequate training and performance standards have been achieved.

SECTION 6

Continuous monitoring, evaluation, and refinement

A word processing system should be continuously evaluated by all people involved. In addition, periodic

evaluations and audits should be made to assure the integrity and operational efficiency of the system.

Monitoring the system

Monitoring and audits should be performed by supervisory personnel on a routine basis. If the system involves more than two or three work stations, an individual should be officially assigned responsi-

bility to oversee and manage all word processing operations. Users should be routinely surveyed every few months to assess the adequacy of service and to identify areas for improvement.

Evaluation of the system

Several types and methods of audit should be conducted at least once a year.

Procedural audits

This type of review involves verifying that input, processing, and output procedures are met and that system controls are operating as designed. The procedural evaluation also ascertains by whom, where, and when various word processing functions are being performed.

System assessment

This is concerned with the technical aspects of word processing and the degree to which the system is meeting the standards established for it. Normally, this evaluation is conducted by knowledgeable specialists. Performance should be assessed in relation to the plan or preestablished goals of the court, and

any variances should be noted, investigated, and explained.

The areas that should be evaluated include

- operating system performance, which includes the adequacy of the existing equipment, storage capacity, and functional capabilities of the software;
- equipment reliability and maintenance service;
- performance measurements, including the quality and timeliness of the documents produced and the accuracy of the information provided;
- backup and contingency plans;
- data and system security;
- adequacy of documentation;
- personnel competence and use of system's capabilities;
- environment (operators' comfort);
- workflow improvement.

Refining and upgrading the system

Because of the rapid advancements in word processing technology, chances are good that new equipment or enhancements to existing software packages will be available within a short time after the system is installed. Most software improvements are minor refinements or enhancements to the initial software provided. These enhancements should not require any significant retraining of personnel. The court should stipulate in the contract that the vendor will provide any software enhancements at no cost for at least one year after installing the system, and at a prescribed nominal cost after the first year of installation.

If existing equipment does not meet the anticipated goals and objectives within a reasonable time (six to nine months), the court must seriously study whether additional equipment enhancements will resolve the problems or whether equipment conversion to another

manufacturer is necessary. The political and practical implications of a major equipment conversion are usually severe; therefore, the importance of a thorough analysis and comprehensive evaluation of vendors' capabilities and capacities before acquisition cannot be overemphasized.

At some point, particularly if the court is using outdated word processing equipment, or if substantial changes are made in requirements and services needed, court managers should consider the possibility of substituting or substantially upgrading their equipment. Some equipment changes, such as changing printers or storage devices (upgrading from 5¼" to 8" floppy disks, or from floppy disks to Winchester disks) should be easy, and will offer better performance at competitive prices.

Before a decision is reached on any substantial hardware changes or expansion of the system, a cost-

benefit analysis should be done to determine whether the change is cost-effective. A number of considerations should enter into this decision.

Does the additional, upgraded equipment or alternative word processing system truly provide greater capability and capacity for a lower or equal price?

What is the cost and the required time for conversion?

What is the remaining useful life of the existing equipment?

What effect, good or bad, will the replacement equipment have on court personnel and court performance?

What guarantees and warranties will the vendor provide?

Summary

The use of word processing technology in the courts has not been as rapid as in the private business sector. Courts, for the most part, are just beginning to realize that word processing can be an inexpensive solution to the myriad paperwork problems faced daily. As with any technology, the potential user of a word processing system should develop a plan to evaluate the feasibility and applicability of a system in his own setting. The importance of the "systems approach" cannot be stressed too much.

Word processing technology has evolved from the magnetic card stage to the point where each word processing system can be a small computer system housed within a single CRT. Today's systems are capable of "talking" with other systems for the price of a long-distance telephone call. Data processing and word processing are converging and becoming information processing.

Appellate courts within a large state can transfer opinions from one jurisdiction to another almost

instantaneously. Material to be printed can go directly from a floppy disk to a photocomposition unit. Many systems can now communicate directly with LEXIS and WESTLAW, which provides automated legal research. Trial courts can produce forms and notices much faster, can edit and revise manuals and regulations more easily, and may find that low-volume case tracking and records processing can be done with a word processor more easily than manually.

The growth of the word processing industry and the advancement of technology continue to reduce the cost of word processing systems. Within the next decade the word processing computer will be as common a fixture in offices as the electric typewriter. Word processing is a technology that is already easy to use and practical, and courts should be taking advantage of the efficiencies it can offer in processing paperwork.

Glossary of Word Processing Terms

ACOUSTIC COUPLER. A device used with a telephone for transmission of information between word processors, computers, or other equipment. Couplers are portable and used for slow-speed communications.

ACOUSTIC COVER. A sound-deadening cover that houses a printer.

BACKGROUND PROCESSING. The ability to keyboard or edit text simultaneously while printing, telecommunicating, or performing other word processing functions.

BIDIRECTIONAL PRINTER. A printer that prints from left to right and right to left to increase the printing speed.

BLOCK-MOVE/COPY. The function that allows blocks of text to be moved or copied within a document or to another document.

BOILERPLATE TEXT. Standard text that is stored and used repetitively to create new documents.

BYTE. A unit of computer storage approximately equal to one character.

CENTERING. The function that automatically centers text between margins.

COLUMN MOVE/DELETE. The capability of a word processor to isolate columns of information and restrict the editing functions to the columns.

CONTINUOUS FORM. Sheets of paper connected by a perforated edge designed to be used with a pinfeed platen or tractor-feed device.

CONTROL CHARACTER. A symbol that designates a particular function, such as a tab. This symbol appears on the screen but does not print.

CPS (characters per second). The number of characters an output device prints in one second.

CPU (central processing unit). The part of a computer that includes circuits that control the interpretation and execution of instructions.

CRT (cathode ray tube). A video display screen.

CURSOR. A lighted position indicator on a CRT. Most systems employ a series of arrow keys for up and down, left and right movement in making revisions to text.

DAISYWHEEL. Interchangeable print element for a printer.

DAISYWHEEL OR THIMBLE PRINTER. An interchangeable element-impact printer, offering letter-quality printing, at a printing speed of 20-55 characters per second.

DATABASE. A collection of interrelated data organized in a computer to reduce duplication of information, to provide for rapid retrieval and reorganization of the data, and to generate various listings and reports.

DECIMAL ALIGNMENT. The function that automatically aligns columns of figures on the decimal point.

DEFAULT FORMAT. A format setting, with commonly used margin and tab settings, that is automatically implemented by the system when a format is not specified by the operator.

DELETE CAPABILITY. The function that removes characters, words, lines, sentences, paragraphs, or pages from the storage medium.

DICTIONARY/SPELLING VERIFIER. The function that matches words against a prestored dictionary, in order to check for spelling or typographical errors.

DISK DRIVE. The device that operates the floppy or hard disk.

DISCRETIONARY HYPHEN. A hyphen, inserted by the operator, that is printed only if the divided word appears at the end of the line.

DISPLAY BUFFER. In CRT-based systems, a temporary storage area used for inputting data before it is transferred to diskette for permanent storage.

DISPLAY FUNCTIONS. Text editing or computer functions that can be seen on a CRT screen.

DISTRIBUTED-LOGIC WORD PROCESSING SYSTEM. A word processing system where each terminal has its own computer logic. Peripherals and storage devices are frequently shared by the terminals.

DOCUMENT ASSEMBLY/MERGE. The ability to combine several documents to create new documents. Also refers to the merging of letters and address lists to print personalized letters.

DOCUMENT-ORIENTED SYSTEM. A system that stores text as multi-page documents. Repaginating documents, moving or copying text from page to page, and reformatting are usually easier and faster to accomplish than on page-oriented systems. See page-oriented system.

DOUBLE DENSITY. The storage of information on a floppy diskette in a manner that doubles the capacity of a standard diskette.

DOUBLE-SIDED DISKETTE. A type of diskette that uses both sides for the storage of information.

DUAL COLUMN. The ability of a word processing system to format text in two side-by-side columns.

ELECTRONIC TYPEWRITER. A category of office keyboard equipment classified as between electric typewriters and word processors. Electronic typewriters can facilitate arrangement of text as it is input and can store some typed information, but have limited text-editing capabilities.

ERROR CORRECTING. The function that allows the operator to replace one character by striking over it with another.

EXTRA-WIDE LINE WIDTHS. Capability that allows the creation of wide documents, usually in excess of 200 characters in width.

FILE LENGTH. The number of characters, lines, or pages in the document or data file being accessed.

FILE SELECT. The ability of the system to selectively retrieve information from data files, on specification by the operator.

FILE SORT. The ability of the system to arrange data in alphabetical or numerical order.

FOOTER. Information to be printed at the bottom of all or most pages of a document. This function is frequently used in conjunction with automatic page numbering.

FOOTNOTE TIE-IN. The ability of a word processing system to link footnotes to applicable text, so that the footnote will appear on the proper page.

FOREGROUND PROCESSING. A word processing application such as telecommunication or printing that prohibits the use of the system for other word processing functions at the same time.

FORMAT DISPLAY. The visual display of the page and document format, e.g., margin and tab settings, pitch size, and line spacing.

FORMS-FEEDING DEVICES. A pinfeed-platen or forms-tractor device attached to a printer for continuous paper feeding.

FORMS INPUT. The function that allows an operator to fill in information on forms by advancing from one blank to another with a single keystroke.

FUNCTION OR CODE KEY. The key that activates a particular machine function.

GLOBAL SEARCH AND REPLACE. The ability of a system to search for repeated occurrences of a character string for deletion or replacement.

GLOSSARY. The capability that allows the storage of frequently used phrases, editing commands, or complete applications. This information can be recalled with a minimum of keystrokes.

HEADER. Information to be printed at the top of all or most pages of a document. This capability is frequently used in conjunction with automatic page numbering.

HIGHLIGHTING. The capability of a CRT-based system to emphasize text for editing functions, e.g., moving or deleting. Several techniques are used, such as intensifying the characters, blinking, or reversing the display screen colors.

HORIZONTAL SCROLLING. The ability of a CRT-based system to move the cursor horizontally along a line of text to access the characters that exceed the capacity of the screen to display.

HYPHENATION. Methods used by word processing systems to determine the proper hyphenation points for end-of-line word divisions.

HOT ZONE HYPHENATION. A method of hyphenation by which words that do not fit within an operator-defined end-of-line space are hyphenated or moved to the next line.

HYPHENATION SCAN. A method of hyphenation where the cursor moves through the document and stops where an end-of-line hyphenation decision is required.

IMPACT PRINTER. A printer that uses a striking device and a ribbon to print characters. Examples of impact printers are the daisywheel, matrix, and line printers.

INK JET PRINTER. A non-impact printer that uses a stream of ink to form characters.

INSERT. Function that allows text to be added to a document.

INTELLIGENT TERMINAL. A terminal with an internal memory.

INTERCHANGEABLE FONTS (ELEMENTS). Printer elements in various styles and type sizes.

JUSTIFICATION. The ability of the system to print documents with an even righthand margin.

KEYBOARDING. The process of entering information into a word processor using a keyboard.

LASER PRINTER. A non-impact printer that uses a light beam to produce printed copy.

LETTER-QUALITY PRINTER. A printer that generates output suitable for high-quality correspondence.

LINE PRINTER. A high-speed draft printer that prints what appears to be a line at a time.

LINE SPACING (AUTOMATIC). Line spacing (single, double, triple) specifications are stored within the document so that printer adjustments are not needed.

MATRIX PRINTER. An impact printer that uses needle-like pointers to create characters formed by a combination of small dots.

MEDIA CONVERTER. A device that converts information from one type of magnetic storage medium to another.

MICROCOMPUTER. A small, single-terminal computer.

MINICOMPUTER. A computer larger and more powerful than a microcomputer, usually executing instructions 16 or 32 bits (two or four bytes) at a time.

MICROPROCESSOR. A miniature electronic circuit placed in a computer that can perform word and data processing operations.

MNEMONIC KEYS. A type of command structure that uses a code key in conjunction with standard alphanumeric keys instead of special function keys. Mnemonic commands are often abbreviations for the function they implement, e.g., an "sml" command could be used to "set margin left."

MODEM (DATA SET). A communication device that converts data for transmission over telephone lines.

MULTIPLE-WORKSTATION WORD PROCESSOR. A multi-terminal system where the computer memory or other peripheral devices are shared.

ON-LINE/OFF-LINE SWITCH. The dual capability of a word processor of sharing the facilities of another word or data processor (on-line) or operating independently (off-line).

OPTICAL CHARACTER READER (OCR). A peripheral device that scans typed copy and transfers the information to a word processor.

OPERATING SYSTEM. Software programs used to control the operation of the word processing or computer system.

PAGE NUMBERING (AUTOMATIC). The ability of a word processing system to automatically number document pages. When text is rearranged and page numbers change, the system can correct the page numbers.

PAGE-ORIENTED SYSTEM. A system that stores text by page (in blocks of a maximum length). Editing operations, such as repaginating, moving, copying, and reformatting are usually more cumbersome and time-consuming to make than on document-oriented systems (which see).

PAGINATION. The ability to divide a document into pages of a specified length.

PERIPHERALS. Devices (such as printers, OCR readers, and communication interfaces) that are connected to a word processing system to expand its capabilities.

PHOTOTYPESETTING. The setting of type using a photographic process.

PITCH. Number of typed characters per horizontal inch.

PRINTER QUEUEING. The capability that allows several documents to be queued for printing.

PROGRAM LANGUAGE. A language, e.g., FORTRAN, BASIC, or COBOL, used in writing computer programs.

PROMPTS/MENUS. The ability of the system to interact with the operator by displaying a list of possible selections (menus) and asking questions (prompts), as well as indicating operator errors.

PROPORTIONAL SPACING. Ability to print text that is similar to typeset documents in appearance (different amounts of space between characters). Some CRTs can display proportional spacing on the screen.

RECORDS PROCESSING. The capability that allows an operator to selectively retrieve information from files, categorize the files, and generate reports as a result.

REPAGINATION. The ability to change page endings after a document is edited, rearranged, or if a new page length is desired.

SEARCH CAPABILITY. The function that allows an operator to specify and locate a particular character string in a document.

SHARED-RESOURCE WORD PROCESSING SYSTEM. A multi-terminal system that shares one or more components, e.g., printers or storage devices, while the computer memory is distributed to individual terminals.

SHARED-LOGIC WORD PROCESSING SYSTEM. A multi-terminal system that shares a central processing unit and may share other components.

SHEET FEEDER. A peripheral device, mounted on top of a printer, that automatically inserts cut sheets into the printer, and ejects the printed page into a bin.

SIMULTANEOUS PRINTING/EDITING. The ability of the system to print a document while an operator is working on another document.

SINGLE-LINE ADVANCE. The function that automatically advances one line of text on the screen or on the printer.

SOFTWARE. The stored set of programs and routines that control the operation of the hardware and the handling of the data.

SOFTWARE PROGRAMMABLE. A word processing system whose capabilities are defined by a program. The word processing manufacturer makes system enhancements by modifying the program.

STANDALONE WORD PROCESSING SYSTEM. A single-station word processing system that includes a central processing unit, a storage device, an input terminal, and a printer.

STANDARD FUNCTIONS. As defined by the authors, standard functions would include word wraparound, error correcting, insert/delete, automatic centering, automatic underlining, pagination/repagination, block-move/copy, search, global search and replace, document assembly/merge, horizontal scrolling, vertical scrolling, automatic page numbering, subscripts/superscripts, and headers/footers.

STORAGE CAPACITY. The total amount of information stored on the card, diskette, or hard disk.

STORAGE MEDIA. The most commonly used magnetic storage media used by word processing systems are the following:

Magnetic card—capacity of 50 to 100 lines of text

Floppy (flexible) diskette

—8" diameter, capacity of approximately 75 to 120 pages

—5¼" diameter, capacity of approximately 15 to 40 pages

—3½" diameter, capacity of approximately 75 to 120 pages

Disk—rigid, removable or nonremovable disk, capacities ranging from approximately 250 to 750,000 pages

Winchester Disk—rigid, nonremovable disk

5¼", 8", and 14" diameter

Capacities of approximately 1,000 to 200,000 pages

STORED FORM RECALL/DISPLAY. The ability of a word processor to store a form and display it when needed. The operator can combine the form with new keyboarded text, store the form with the new information, or store the form separately.

STORED MULTIPLE FORMATS. The ability to store several formats and to access them as needed.

SUBSCRIPT/SUPERSCRIP PRINTING. The ability of the printer to print characters (e.g., footnotes, formulas, etc.) a fraction of an inch above or below the line.

TABLE OF CONTENTS OR INDEX GENERATOR. Ability of a system to automatically compile a table of contents or index for a document.

TELECOMMUNICATIONS. The capability that enables a word processing system to send data using the telephone lines to other word processing systems or computers.

TOP-OF-FORM ADVANCE. A printer feature that advances each sheet of paper or form automatically to the first line, according to the format chosen.

UNDERLINING (AUTOMATIC). The ability to underline text automatically during input, instead of backspacing and underlining on a character-by-character basis.

UTILITIES. A set of routines concerned with service tasks, such as file maintenance, information recovery from damaged disks, disk preparation, disk copying, and system maintenance.

VERTICAL SCROLLING. The ability to move vertically, a line at a time, through the entire text line, including text for which there is not sufficient room on the screen.

WIDOW/ORPHAN ADJUSTMENT. The function that prevents a single line of a paragraph, title, or heading from printing at the top or bottom of a page.

WORD WRAPAROUND. The ability of a word processor to move a word to the next line automatically if the word does not fit on the line being typed.

WORKSTATION. The word processing components, usually consisting of a keyboard and CRT, that allow an operator to perform the basic word processing tasks.

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Appendices

APPENDIX A Typing survey

Note: A preliminary step in assessing a court's need for word processing equipment is a survey of the amount of typing done, the types of documents, the amount of revision, and the total time consumed in typing. The following suggested instructions will explain to the typist the purpose and method of the survey. A log for recording the results is included.

TYPING SURVEY GENERAL INSTRUCTIONS

Purpose of the survey

The court is studying our typing production for the possible introduction of word processing equipment. The results of this survey will help in determining the equipment and features that may be needed to satisfy our word processing needs.

Typing logs

This survey is designed primarily to determine how much typing and what kinds of typing you receive during the period of the survey. The booklet contains a series of daily log sheets on which you

will describe quickly the typing work you receive. As you will see when you read the instructions, this is not a test of your productivity. We are seeking information on the volume, nature of typing, and time needed to produce court documents.

Survey dates

The typing logs have been designed to collect information on all of the typing jobs you receive over a period of three weeks. The survey should begin on three Mondays and conclude at the end of the day on Fridays. Three mailers have been provided for the return of completed survey forms at the end of each week. They should be put in the mail at the end of the day on the following dates:

Mail forms for first week: _____

Mail forms for second week: _____

Mail forms for third week: _____

These booklets should be sent to: _____

If you have any questions please feel free to call: _____ at _____

Instructions for the log sheets

General instructions

Please start a new log sheet for each workday. If on some days you need more space than is provided on a single log sheet, simply continue to log that day's jobs on the next page of the booklet. Extra log sheets have been included to allow for heavy typing days.

If on a given day you do no typing, write "no typing" or "no exchange of opinions" on the respective log sheets for that day and start a new one for the next day. If you are absent from work at any time during the period of the survey, put your name and the date you were absent on separate sheets for each day you are absent, and write "absent" on each of those sheets.

The logs have been designed to allow you to fill in the necessary information quickly. They should not take you more than a few minutes per day to complete. Each job should be recorded immediately after it has been completed. It is important that you record all of the typing you do regardless of the size of the job.

Filling in the log sheets

1. *Document name.* In this space provide a brief, descriptive name for each document you type. For

6. *Revision number.* Indicate here how many times you have revised a document. Put an "O" for original typing, and a number 1 for first revision, a "2" for the second revision, and so on.

7. *Total lines typed.* Estimate the total number of lines you typed on the document in question.

8. *Total pages in the document.* Write the total number of pages in the document in this space.

appropriate amount of time as you log in a job. This is only for convenience and accuracy in reporting, since there is no need to report the time you enter for individual jobs. We are only interested in the overall typing time requirements that you face in your office and not in the time required for individual tasks.

Filling in the typing time log

1. *Total hours at work.* Record the number of hours you spent at work for each day of the survey period.

2. *Typing time.* Shade in the time line to reflect those times during the day in which you were typing. For accuracy, it would be best if you shaded in the

Copies of all prepared documents

On the following days (or during the 2nd week) please duplicate a copy of each document prepared and note in the bottom righthand corner the approximate time you started and finished typing this document.

TYPING LOG SHEET

Name _____ Date _____

Document name	Author's initials	Machine used (T, DWP, MAG, MEM)	Rush or normal (R or N)	Light or heavy (L or H)	Revision number (1, 2, 3...)	Total lines typed (est)	Total pages

TYPING TIME LOG

Total hours at work _____ Typing time: (Shade in times you spent typing)

7 am	8	9	10	11	12	1	2	3	4	5	6	7pm

APPENDIX B

Request for proposal, Rhode Island Supreme Court information system and site visit report

The Rhode Island Judicial Systems & Services (RIJSS) is hereby soliciting responses from vendors for an integrated word-processing data-processing system for the Rhode Island Supreme Court Management Information System.

The selected vendor will be required to meet the selection criteria as delineated in a later section.

However, if a single vendor cannot meet all of the selection criteria, certain trade-off decisions, weighing the relative importance of each individual criterion and the degree to which each vendor meets said criterion, will be made.

Accordingly, vendors may submit, if they so desire, more than one proposal for consideration.

Background

In 1976 the Rhode Island Supreme Court began a comprehensive review of its workload and procedures. The purpose of the program was to find new ways to deal with the increase in filings and a growing backlog. The program focused on both judicial and administrative aspects of the court. So far the program has yielded many recommendations, and it has also begun to have tangible results.

One example is the significant increase in dispositions over the last two years. This has occurred mainly as a result of several innovations introduced to "screen out" cases that can be disposed of without oral argument and a full opinion. These innovations include the following: adopting more stringent criteria in granting petitions for certiorari; scheduling preargument conferences in those cases where there is a good possibility for settlement; and screening out appeals that are controlled by already existing case law or statute.

The results are obvious. The number of dispositions before argument has increased 65 percent in two years, and the total for the 1978-1979 term was exactly twice what it was in 1973.

The increase in dispositions before argument has been very important. During the last six years the court has experienced a large growth in the number of cases docketed. For every five cases docketed in 1973, seven were docketed in 1979. While dispositions after argument have increased, the numbers have not been large enough to close the gap between filings and dispositions. Consequently, the increase in dispositions before argument has been the key to keeping up with new filings and avoiding further growth in the backlog.

Nevertheless, despite these accomplishments the

court's workload has continued to expand. Even though the total number of pending cases remained the same between 1978 and 1979, the number of direct civil and criminal appeals filed has increased. The additional criminal and civil actions that must be disposed of after oral argument require more time and effort from the court. The prospect of a constantly increasing workload has forced the court to intensify its search for ways to use resources more effectively. One need that has become evident is for an efficient information system. The need exists on both the judicial and administrative side of the court. While not an end in itself, an information system is a means by which the court can increase effectiveness without adding personnel.

In the course of the improvement projects described above, the court has determined that the following capabilities must be developed.

Word processing

A preliminary survey of the options available to the court shows that it is feasible to develop a word processing capability as part of an information system. Such a capability is essential to the court's effort to make better use of existing resources. Word processing would have four primary applications:

- opinion drafting; editing; indexing; and publishing, including telecommunications with a computerized typesetter;
- legal/administrative directories and reports, such as lawyer lists, disciplinary mailings and reports, judicial plans, budgets and annual reports;
- automated legal research and interface capabilities with LEXIS and WESTLAW (legal time-sharing services);

- automated accounting, including an accounts receivable system for the collection of fines, costs and restitution, as well as an internal auditing and fiscal control system.

Automated case tracking

Individual case monitoring, automatic docketing, and automatic noticing are the primary functions which are part of a case tracking capability. The National Center for State Courts in its study "The Appellate Process in the Rhode Island Supreme Court" recommended that the court assume active supervision over cases throughout the appellate process. Implementing the recommendation will require the capacity to monitor status and compliance with procedures on a case-by-case basis. Individual case tracking is a large enough task in itself to justify an automated information system.

Publishing the *Rhode Island Reports*, the official record of the court's opinions, has become increasingly difficult for the court. The cost of printing and the long delay between the filings and the publication of opinions are among the major problems. Four years ago the cost of publishing each volume was \$15,000. The price has climbed to \$22,600 for the last completed volume and to \$25,000 as the lowest bid on the next contract. Along with inflation, the principal reason for these increases is the antiquated method used to publish the volumes. Currently the court provides typewritten copies of each opinion to the printer. The opinion is then set in "hot lead" and page proofs are sent back and forth to the court until all errors are corrected. The process is slow and tedious, and therefore, it is reasonable to expect cost increases until modern technology is introduced.

The time consumed by the publishing process has grown just as significantly. Today it takes almost two years from the filing of the last opinion in a volume to final publication. The practical effect is that opinions that were filed by the court in 1977 have yet to be published. This hampers the operations of the court itself, the lower jurisdictions, and the bar in general. The court estimates that the introduction of a word processing/computerized typesetting system would reduce delay from two years to four months.

There are a variety of other uses for the proposed word processing capacity. One of the most important would be as part of automating the court's case processing system as described above. This application would provide automated docketing, noticing of attorneys, and calendar preparation. Another key use would be the development of an index of the issues decided in the opinions filed by the court. The design of this index would not differ to any great degree from the manual versions that currently exist. However, the data processing capacity would provide a much more comprehensive and accessible system to support the court's research needs.

Another important application would be an accounts receivable system to be used by the central

registry. This system would provide a much more efficient and reliable method for tracking the payments of fines, costs, and restitution. The usefulness of word processing to the court's administrative and supervisory responsibilities is just as obvious. The court now prepares multiple drafts of a variety of reports before publication. Word processing would reduce that need and allow staff to be used more effectively. The same holds true for mass mailings and the repetitive correspondence and notices the court sends out.

I. System goal and objectives

A. Goal

To complete the development of a comprehensive, automated information system for the Rhode Island Supreme Court.

B. Objectives

1. To acquire and install hardware that can support the information system that has been designed for the court
2. To develop, in phases, the three basic functions which the system must have:
 - on-site word processing (text editing) and storage with the ability to provide random access to stored material, cumulative indices of current decisions, citations and key words (when those items are specified), and a means of transferring text to a computer typesetter
 - on-site data processing and storage for selected applications
 - simultaneous communications with a host computer at the Rhode Island Division of Information Processing

II. Evaluation criteria

Eight major selection criteria have been identified. In order of importance they are as follows:

A. Credibility

The vendor must guarantee prescheduled delivery. To minimize this risk, one question that will be raised is, "Is it reasonable to expect the system to be delivered within the cost, time, hardware, software, and personnel constraints outlined in the vendor's proposal?" The evaluation will take two forms:

1. An evaluation of the vendor's track-record in
 - turnkey development projects
 - word processing development projects
 - government projects
2. An assessment of
 - hardware selections
 - software tools recommended (operating system, language, generalized software packages or features)
 - personnel commitment to the project, both numbers and qualifications of key personnel who will be assigned

B. Satisfaction of functional and performance requirements

This document specifies what we would like the system to accomplish. The vendor's proposal should be aimed at satisfying the functional requirements, rather than at concentrating on the technical details presented, since the latter reflect the realities of the existing data processing environment rather than the one envisioned.

C. Cost

The proposal should specify a fixed price bid, broken down into two components:

1. Hardware cost

The configuration envisioned includes, in addition to a central processor and main memory,

- 7 CRTs located on various floors at 250 Benefit St.
- 3 printers (2 letter quality, 1 line printer) capable of handling both on-line and batch-printing requirements
- disk storage capable of handling data storage as outlined in the design statistics, plus any system overhead (program libraries, etc.)
- communications capabilities to the host CPU
- backup (while the Supreme Court does not have the high backup requirements of, for example, a funds transfer application, a failure that would leave the system unavailable for more than half a day with any frequency (i.e., less than 99 percent uptime) would have serious consequences; accordingly, some sort of "cold standby" backup would be required)
- environment—the environmental requirements (electricity, flooring, temperature, humidity, etc.) that must be met (this information will be used to determine site preparation costs, as the equipment will be installed in a normal office environment at the Supreme and Superior Courts Building)

2. Software

A fixed price for the entire system must be specified indicating the costs associated with startup.

- system design
- vendor support (education, training, etc.)
- documentation
- implementation
- maintenance

D. Expandability/flexibility

An anticipated annual growth of 15 percent over a project life of seven years means that the system must be able to handle three times the initial capacity. This applies to data storage, transaction throughput, and printing. In

addition to an increase in the same transactions, there will be enhancements to the system, both known (hardware interface to another CPU) and unknown. A full-time programmer/analyst will be assigned to this project to participate with the vendor in all phases of the project so that he/she will be able to maintain and enhance the system in the future. To meet this criterion, the vendor should show:

1. How the initial hardware and software configuration can be expanded to process three times the volume, and how it can be further expanded to meet other known and unknown enhancements. Costs of expansion should also be presented.
2. The role our programmer/analyst would play in the development.

E. Development time

Since one of this project's goals is to speed judicial processing, timeliness is essential. The vendor should indicate how long each component will require and how this time commitment will be met.

F. Reliability

The vendor should comment on the reliability and service of the hardware along with what provisions (warranties, etc.) would be available to ensure software reliability.

G. Financial stability

One risk in dealing with outside vendors is the possibility of financial failure during the project. To assist in evaluating this likelihood, the vendor should include financial information.

H. Geographic proximity

A means of reducing another of the risks inherent in dealing with an outside vendor is to facilitate the ease of communication between vendor and customer. The vendor should indicate the location of the office from which development and service will work.

III. Bid proposal format

A. General

The bidder's response to this Request for Proposal shall be made according to the specifications set down in this section, both for content and for sequence. As the bid proposal shall be used to determine the bidder's capability, it should be specific and complete in every detail. The proposal should be practical, clear, and coherent.

The Supreme Court shall provide no financial assistance to any bidder for preparation of the proposal. However, the court will make available to bidders relevant user data and information.

The bidder should not necessarily limit the bid response to the performance of the ser-

vices in accordance with this document, but should outline any additional services and their cost if the bidder deems them necessary to accomplish the program.

The bidder will submit six complete copies of the proposal and any related information in sealed envelopes to:

State of Rhode Island and Providence
Plantations
Division of Purchasing
289 Promenade Street
Providence, Rhode Island

A bidder's conference will be held on May 6 at the Providence County Courthouse, 7th floor, 250 Benefit Street, Providence, Rhode Island, at which time all bidders will be given an opportunity to ask questions concerning the Request for Proposal. The conference will begin at 10:00 a.m. Proposals will be delivered no later than 12:00 noon on May 23. An announcement of the vendor selected for purposes of contract negotiation will be made on approximately June 6.

B. Specific format

The bid proposal is to be completed in six separate sections, with a cover page identifying each section. Pages in the proposal are to be numbered consecutively with the Table of Contents designated as page 1. Proposals must be presented in the following sequence:

1. General
2. Hardware/software
3. Vendor support
4. Delivery schedule
5. Cost data
6. Statement of bidder's qualifications

Specific outline instructions by section follow.

1. General

Submit with your proposal a letter of transmittal; a brief executive summary with conclusions and recommendations; and a completed Rhode Island Division of Purchases Bid form (see attached).

2. Hardware/software

Submit information on the device proposed as well as sizes or capacity where appropriate.

Provide a complete description or technical manuals describing the software:

- language supported
- ease of programming
- flexibility in format of inquiry, update, output
- communication capabilities with host computer

Provide detailed descriptions of features of the software proposed that will assist in protecting the privacy and confidentiality of the stored data, as well as unauthorized

access to the data.

Describe the system used for the identification and reporting of software malfunctions. Clarify the relationships between this system and any system used to report hardware malfunctions.

Discuss any additional chargeable software packages, features or languages that the bidder feels might be of interest, with charges and requirements for such features.

3. Vendor support

Describe the capability of providing training for analysts, programmers, and operators. Document the scope of training, frequency, and location as well as associated costs. Also state whether hardware similar to the proposed is available for training prior to delivery.

For each person whom the bidder will make available to support the system (installation, systems, maintenance), provide the following: title, responsibility, past experience, resident office.

4. Delivery schedule

State the dates on which all hardware and software requisite for initial operations could be located on site.

State the date by which all hardware and software in your proposal could be fully operational.

5. Cost data

A complete disclosure of all cost to the issuing agent associated with procuring, transporting, installing, and making operational all hardware in the bidder's proposal must be made available in this section. Use the form provided plus any additional information you believe relevant for this purpose.

Discuss and explain each of the available plans (purchase, lease, rent) that the bidder's firm offers as it relates to this proposal. Include a copy of the bidder's standard contract for the type of plan offered.

- vendor support costs (education and training, location and miles from installation to training facility); vendor systems engineers/analysts/programmers (explain in detail)
- documentation costs (technical manuals and programming aids, quantity of each and costs)

Itemize each chargeable software package, routine or function which is included in the vendor's proposal. State the monthly rental cost and purchase price for each. Also indicate proprietary rights to software.

List and identify any other cost to be charged to the issuing agent relative to the procuring, installing and making opera-

tional of the equipment and software included in the bidder's proposal (minimum reference to Part II, C.1, 2).

6. Statement of bidder's qualifications

Complete copy of Form 4 concerning bidder's qualifications and submit as part of the proposal package. Include any additional information which the bidder considers to be pertinent to his qualifications. Provide the name, address and telephone number of the individual(s) within the bidder's firm authorized to negotiate and sign a binding contract in the event that the bidder's proposal is accepted.

IV. Specifications

The three basic functions which the system must perform will be developed in phases.

A. Word processing (phase 1)

The word processing function will be the first to be developed, primarily because of the large backlog of opinions that have yet to be published. The court has decided that addressing the word processing needs immediately is not only a cost-effective approach but also avoids compounding existing problems. If possible, the development of the other functions (data processing and communications) will start before this phase is finished. The court anticipates that the word processing software package provided by the vendor will meet most of its needs. There are, however, applications that are particular to the court.

A good example of this is the capacity to create and automatically update indices of the cases and statutes cited by the court in the opinions. This is a use that is particular to the legal environment.

The final step in this phase will be the "backloading" and processing of the opinions yet to be published. The backloading will begin at the same time as the regular operation of the system. In this way the court hopes to be current in a relatively short time. Other word processing applications have been given a lower priority. Administrative applications, such as report preparation and editing, automatic letter writing and other judicial applications will be deferred until the telecommunications and data processing phases are complete.

B. Telecommunications (phase 2)

The host system (at the Rhode Island Division of Information Processing) will maintain master files of all data processing records. The local system will be designed to do word processing and telecommunicate with the host system at the same time. The display terminals which are part of the local system

will be used both to display and to update master files.

This communications capability is essential to the court's aim of building a distributive information processing system. A comprehensive statewide judicial information system requires that information about cases be available to other courts and offices. Further, it is essential that case tracking and comprehensive criminal histories have (where legal) relevant information from all the courts. A telecommunication capability allows this. Nevertheless, there are numerous applications that should be developed and maintained more appropriately on a small standalone mainframe. An accounts receivable system for fees, costs, and fines is a good example of such an application. The maintenance of cumulative indices (mentioned above) as well as computer-assisted legal research are other examples of instances where a local mainframe would be most appropriate. Such a mainframe with a communications capability is the most cost-efficient option.

C. Data processing (phase 3)

The local, standalone data processing system will be programmed (in COBOL) to handle transactions and files that are to be maintained solely within the court. It will also be designed to allow the operators to update reports prepared on the host system and transmitted to the local system. After updating is complete, the new transactions will be communicated to the host system, where they will update a master file. As indicated above, the local hardware must be able to handle all three functions (word processing, telecommunications, and local data processing) simultaneously without degradation.

The court expects that this system will provide calendar control and case monitoring reports, be used in maintaining an automated docket and in producing the court's calendar of scheduled events. In concert with the word processing component, the data processing system will also provide automatic noticing of participants as to scheduled actions. The system will also be used for the collecting, storing, and reporting of management statistics. Since this will involve both Supreme Court and systemwide data, the telecommunication capacity will be needed for this application.

V. Performance requirements

A. CRT response time

The CRT response time is measured as the elapsed time between the depression of the "send" key and the appearance on the screen of the first character of response. Based on the

mix of a typical day's work, 90 percent of the transactions must have a response time within 3 seconds, and 98 percent of the transactions must have a response time within 8 seconds.

B. Printer response time

A hard copy document, instead of a new screen, is produced by a number of CRT transactions, with response time measured as the time between depression of the "send" key and the appearance on the printer of the first character. Based on the projected mix of transactions, 98 percent of the on-line printing must have a response time of less than 2 minutes.

VI. Detailed requirements

A. Opinion processing

1. There are five general requirements on processing opinions:

- that the current level of security be maintained
- that the requisite indices be generated via the initial entry of the text onto magnetic media
- that the headnotes be appended in such a way as to allow for accessing them as an index
- that the opinions awaiting publication be entered on magnetic media simultaneously with the opinions ready to be filed
- that the proofreading process be reduced to one proofreading

2. The project will address the Supreme Court's need to publish the *Rhode Island Reports* more promptly. At present the publication of these reports includes the following processes:

- initial drafting of the opinion
- revisions prior to review by the other justices
- revision prior to finalization
- revisions subsequent to the grammarian's review
- revisions subsequent to citation checking
- proofreading subsequent to final approval
- filing the opinion with the clerk's office
- dissemination of photocopies
- appending headnotes to each opinion
- typesetting the opinion
- proofreading galley proofs
- revisions subsequent to galleys
- preparation of page proofs
- creation of requisite indices
- pagination of indices entries
- typesetting indices
- printing and binding

3. The proposed system will concentrate on all of the above-mentioned elements except dissemination of photocopies and printing and binding. It will begin at one of the

following stages, depending on the individual justice's preference: the initial drafting of the opinion; or revisions subsequent to finalization. It will end with the publication of the *Rhode Island Reports*. The highest priority will be given to the simultaneous entry of the opinions awaiting publication and the opinions currently being filed.

4. The secretary to the assigned justice will require the capability to

- revise only portions of the opinion
- copy standard text from another document into the current opinion
- move sentences and paragraphs within the current opinion
- search through the opinion for a word, or words, and to replace these with other words
- enter heading information only once
- repaginate automatically
- change the format of the opinion after it has been keyed
- type without regard for hyphenation or margins
- locate the sections to be revised without searching through each page

5. The court secretary will require the capability to

- access all case title and citations in the opinion, as an index
- proofread the opinion only once

6. The administrative assistant to the chief justice will require the capability to

- store the headnotes as glossaries
- index the headnote summary
- generate the indices automatically

B. Supreme Court management information system

The Supreme Court management information system project will address the Supreme Court's need to monitor and track cases as they progress through the Supreme Court judicial process. The system will encompass the following portions of the Supreme Court's caseload: criminal appeals, including state's appeals prior to trial; civil appeals, including certified questions of law; petitions for writs of certiorari; petitions for writs of habeas corpus; and other miscellaneous writs and petitions.

The data collection process will begin with the filing of a notice of appeal or a petition and will end with receipt of the final Atlantic Reporter citation. Both operational and management reports will be considered by the information system. As usual, the outputs with the highest priority for automation will be implemented first.

There are three general requirements for the Supreme Court clerk's office: that the

current level of security be maintained; that Supreme Court services not be interrupted; that the statutes and rules pertaining to the appellate process serve as constraints.

The Supreme Court clerk's office has a need for detailed case information to assure that case files are complete and to schedule hearings on cases, as well as a need to produce form notices that could be prepared automatically. The administrative assistant to the Chief Justice and the Appellate Screening Unit under his supervision also need some detailed case information to identify procedural errors or missed deadlines.

Summary information on Supreme Court activity and pending cases is required by the chief justice and the associate justices of the court to support their scheduling and policy decisions.

The accounting unit for Supreme Court activity is the appeal or miscellaneous petition (original action). This unit is not necessarily equal to defendant or case units used in trial courts. A single case or even defendant may account for several appeals while a number of cases or defendants may be consolidated into one appeal. It is acknowledged that while measures of Supreme Court activity require dispositions in terms of appeals or original actions, dispositions may also have to be recorded according to trial court cases or defendant units.

Counting and tracking appeals must begin in the trial courts where these appeals originate. Caseload reports on the time taken at each stage of the appellate process require that processing time be calculated beginning at the decision in the trial court and continuing through several steps before the appeal is docketed in the Supreme Court. Counting trial court dispositions and appeals filed before they are perfected and transferred to the Supreme Court is necessary for calculating appeal rates and compiling other information useful for caseload projections.

1. Monitoring Supreme Court activity and workload

- court activity summary: monthly and annual statistical reports of filings and dispositions; filings reported by offense category, by trial court or other source, by

basis of jurisdiction, and by type of appeal; dispositions reported by manner of disposition and the decision of the court

- summary of pending cases: monthly and annual statistical reports of filings awaiting disposition; pending cases reported by offense category, by age (within several ranges), and by stage in the appellate process
 - average processing times: monthly and annual statistical report of the median time between processing stages; times reported by type of appeal
 - caseload projection: monthly and annual tracking report of trial court decisions and of appeals filed in trial courts; decisions reported by offense category; appeals reported by offense category, by appealing party, and by stage in the process; both decisions and appeals reported by trial court
- #### 2. Screening appeals
- exceeded time limits: monthly exception reports listing cases where time limits have been missed by either party at any of several stages; exceptions reported by stage at which deadline was missed and by party responsible
 - sentence review cases: monthly list of those appeals to the Supreme Court that concern cases where sentence review appeals have been filed in the trial court; these appeals reported by the processing stage of the sentence review in the trial court and by disposition of the review in that court
- #### 3. Docketing cases, notifying parties, and scheduling hearings
- docket book: immediate list of all appellate process transactions for each appeal or original action
 - notices and requests for briefs: form letters sent to attorneys at the time an appeal is docketed
 - ready for oral arguments list: monthly list of all appellate cases ready to be scheduled for oral argument by type of appeal and with indication of months each case has been on the list; possibly, arranged by pre-assigned priorities

TRANSACTION VOLUMES/STORAGE REQUIREMENTS

Input (lines/day) (60 characters/line)				Output (lines/day) (60 characters/line)			
Function	Average	Minimum	Maximum	Function	Average	Minimum	Maximum
Opinion drafts	900	200	11000	Opinions	450	120	5550
Opinion indices	165	50	8170	General orders	10	6	15
General orders	18	12	24	Headnotes	150	40	1850
Headnotes	190	41	2000	Form letters	1400	940	2800
Form letters	1700	1000	3000	Reports	730	560	2800
Reports	1300	1300	4000	Case processing reports	1570	750	3120
Case processing*	500	500	600				
File maintenance*	3900	2600	5200				

*(characters/day)

Inquiry (number/day) (1920 character screen)				Storage Requirements (characters)			
Function	Average	Minimum	Maximum	Function	Average	Minimum	Maximum
Cross-reference	15	3	30	Opinions (Including general orders and headnotes)	16,780,800	8,390,400	33,561,600
Docket	10	5	20	Opinion indices	12,060	4,380	116,160
Summary	20	10	40	Form letters	208,800	104,400	417,600
Opinion indices				Reports	43,800	33,600	120,000
—Cases reported				Case processing file	2,100,000	1,080,000	2,400,000
—Orders reported							
—Cases cited							
—Statutes & rules cited							
—Digest							
Complaint/respondent index	25	15	40				

SITE REPORT

After selection and installation of a system in 1980, a report of its equipment and operation was made in 1983 by National Center staff.

Name of court

Rhode Island Judicial Systems and Services (RIJSS)
Rhode Island Supreme Court

Equipment

Two Wang Virtual Storage Minicomputers

Date of installation

1980

Method used for selecting equipment

Request for proposal was sent to eight vendors.

Word processing applications as stated in request for proposal

- Opinion processing, indexing of opinions, and capability of telecommunicating opinions from word processor to a typesetter.
- Preparation of directories, reports, lawyer lists, judicial plans, budgets, annual reports, and lengthy mailing lists.
- Capability of doing automated legal research using LEXIS and WESTLAW.
- Automated accounting system.

Word processing capabilities required as stated in request for proposal

Block-move/copy, global search and replace, word wraparound, headers/footers, search, glossary, file select, system security, telecommunications, stored multiple formats, automatic page numbering, pagination, repagination, insert/delete, document assembly/merge.

Reasons for selection of system

Satisfied hardware and software requirements.
Reliability of system, vendor support, and ease of operation confirmed by other organizations using the same equipment.
Lease options were favorable.
Expandability and flexibility of system.
Capability of the system to generate indices of cases and statutes cited in opinions.

Word or data processing system in court before the present system was selected

No word processing system.
No data processing system.

Equipment to be purchased according to request for proposal

1 Central processing unit
7 CRTs

- 1 High-speed printer
- 2 Letter-quality printers
- 1 Twin-sheet feeder
- Telecommunications

Compatibility necessary between this system and another system

This system had to be compatible with a host computer at the Rhode Island Division of Information Processing.

System components as of January 1984**System 1**

Central processing unit (used by Supreme Court and Superior Court)

Tape drive

Fixed and removable disk storage

2 Floppy disk drives

30+ CRTs

5+ Letter-quality printers

2 Line printers

Twin-sheet feeders

Telecommunications equipment

System 2

Central processing unit (used by other trial courts)

60+ CRTs

20+ Printers

Fixed and removable disk storage

Line printers

Matrix printers

Telecommunications equipment

Tape drive

Location of terminals

Distributed, at secretarial and professional staff desks.

Integration of word and data processing files

It appears that data and word processing are not using each other's files. It is anticipated there will be greater integration in the future.

Present word processing applications

Processing of opinions in Supreme Court and decisions in lower court.

Preparation of orders and notices.

Oral argument calendar and other calendars.

Record of child support payments is maintained in juvenile court.

Case tracking by public defender.

Reports, correspondence, personalized letters, mass mailings.

Special word processing capabilities used

There is extensive use of glossaries in the Rhode Island operation. Wang glossary capability is similar to a programming language and is not limited to phrase storage. Complete applications, such as the selection of cases by judge from the oral argument calendar, can be handled using glossaries. Use of math program has been incorporated into the glossaries. Glossaries have been written to standardize the typing of opinions. Much of the manual set-up of standard documents has been eliminated by glossaries. Standard glossaries available from Wang Laboratories have been modified for the Rhode Island courts' use.

There is extensive use of document assembly/merge. In addition to the standard use for personalized letters, this capability is also used in glossaries.

Training process

Several individuals were initially trained by the vendor on the basic operation of the system as well as on advanced functions such as glossary writing. Training is now in-house and handled by two individuals. This training program is superior to the vendor training. Glossaries have been written so that new operators can have hands-on training to learn the basic operation of the system. This is a sophisticated method of training and could serve as a model for other courts.

APPENDIX C

Telephone survey of five courts using word processing

Note: Information was gathered in 1983 on the word processing systems used in five courts in order to determine locations for site visits.

Court
Alabama Supreme Court

Person contacted
Louise Livingston
Assistant to Ms. Norwood

System used
A. B. Dick Magna III

Configuration
Standalone (3 terminals)

Applications
Text editing
Personalized letters
Mass mailings

Comments
They are using the glossary capability for sentence/phrase storage and are beginning to do alphanumeric sorts. The A. B. Dick system is not suitable for preprinted forms.

Court
District of Columbia

Person contacted
John Meggers
Administrative Assistant to
Mr. Polansky

System used
CompuCorp

Configuration
Combination of standalone and
shared-logic

Applications
Text editing
Personalized letters
Mass mailings

Comments
Standalones in executive offices, chief justices, retired judges chambers, court of appeals. Shared-logic system in court reporters section. Programs are being written in BASIC to determine what can be done on word processing.

Court
West Virginia Supreme Court of Appeals

Person contacted
Ted Philyaw
Assistant to State Court Administrator

System used
IBM Displaywriter

Configuration
Standalone

Applications
Text editing (opinions)

Court
Court of Appeals of Georgia

Person contacted
Alton Hawk, Clerk

System used
Lanier

Configuration
Standalone (3 terminals)

Applications
Text editing

Comments
They were at one time entering docket on word processing systems, but have reverted to manual method.

Court
Texas Probate Court (Houston)

Person contacted
Judge Pat Gregory

System used
Alpha Micro

Configuration
Shared-logic (5 terminals)

Applications
Text editing
Records processing (operational case processing)
Personalized letters
Mass mailings

Comments
They are beginning to set up files for alphanumeric sorts and selective retrieval.

National Center for State Courts

The National Center for State Courts is a non-profit organization dedicated to the modernization of court operations and the improvement of justice at the state and local level throughout the country. It functions as an extension of the state court systems, working for them at their direction and providing for them an effective voice in matters of national importance.

In carrying out its purpose, the National Center acts as a focal point for state judicial reform, serves as a catalyst for setting and implementing standards of fair and expeditious judicial administration, and finds and disseminates answers to the problems of state judicial systems. In sum, the National Center provides the means for reinvesting in all states the profits gained from judicial advances in any state.

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OFFICES AND MANAGEMENT STAFF

Headquarters
300 Newport Avenue
Williamsburg, VA 23185

Edward B. Mc Connell
Executive Director

Keith L. Bumsted
*Director for Administration
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Linda R. Caviness
*Director for Development
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Northeastern Regional Office
1545 Osgood Street
North Andover, MA 01845
Samuel D. Conti, Regional Director

Southeastern Regional Office
300 Newport Avenue
Williamsburg, VA 23185
James R. James, Regional Director

Western Regional Office
720 Sacramento Street
San Francisco, CA 94108
Larry L. Sipes, Regional Director

Institute for Court Management
1624 Market Street, Suite 210
Denver, CO 80202
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Center for Jury Studies
300 Newport Avenue
Williamsburg, VA 23185
G. Thomas Munsterman, Director

**Institute on Mental Disability
and the Law**
300 Newport Avenue
Williamsburg, VA 23185
Ingo Keilitz, Director

Washington Liaison
Hall of the States
444 N. Capitol Street, Suite 608
Washington D.C. 20001
*Harry W. Swegle,
Washington Liaison*

END