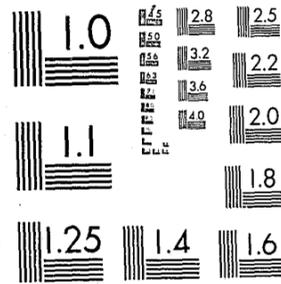


National Criminal Justice Reference Service



This microfiche was produced from documents received for inclusion in the NCJRS data base. Since NCJRS cannot exercise control over the physical condition of the documents submitted, the individual frame quality will vary. The resolution chart on this frame may be used to evaluate the document quality.



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Microfilming procedures used to create this fiche comply with the standards set forth in 41CFR 101-11.504.

Points of view or opinions stated in this document are those of the author(s) and do not represent the official position or policies of the U. S. Department of Justice.

National Institute of Justice
United States Department of Justice
Washington, D. C. 20531

DATE FILMED

11/9/81

75958
85651

T
R O E R
P R O U S
H E U S
O R
H E R
T P H O E TS
O P B T
ST E P B
O
T A O E U P
P H P B
T P H T
S A E U P L
P H A R P B
A S
P W R
F P L T
T
ST E P B
O
T A O E U P
P H P B
H A S
P W E P B
H O D
A O E U D
R B G S
H O U F R
R B G S
A O
L S
R O U
A
H A G
H E T
E U B G
A E U P
A
E T
O E P

COMPUTER-AIDED TRANSCRIPTION IN THE COURTS

EXECUTIVE SUMMARY

February 1981

National Center
for State Courts

U.S. Department of Justice 75958
National Institute of Justice

This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated in this document are those of the authors and do not necessarily represent the official position or policies of the National Institute of Justice.

Permission to reproduce this copyrighted material in microfilm only has been granted by
Nancy Rodrigues
~~Nat'l Center for State Courts~~

to the National Criminal Justice Reference Service (NCJRS).

Further reproduction outside of the NCJRS system requires permission of the copyright owner.

COMPUTER-AIDED TRANSCRIPTION IN THE COURTS

EXECUTIVE SUMMARY

A project of the
National Center for State Courts
300 Newport Avenue
Williamsburg, Virginia 23185

NCJRS

MAR 19 1981

ACQUISITIONS

This project was supported by Federal Grant No. 79DF-AX-0188 awarded as part of its Court Delay Reduction Program by the Law Enforcement Assistance Administration--Office of Criminal Justice Programs/Adjudication Division, U.S. Department of Justice. The Computer-Aided Transcription Analysis Project was directed by Richard W. Delaplain for the National Center for State Courts and monitored by Michael R. Maione for LEAA. Points of view or opinions stated in this document are those of the author and do not necessarily represent the official position or policies of the U.S. Department of Justice.

National Center for State Courts Board of Directors

Honorable William S. Richardson
(President)
Chief Justice, Supreme Court
of Hawaii

Honorable Joe R. Greenhill
Chief Justice, Supreme Court
of Texas

Honorable Theodore R. Newman, Jr.
(Vice President)
Chief Judge, District of
Columbia Court of Appeals

Honorable Lawrence W. I'Anson
Chief Justice, Supreme Court
of Virginia

Honorable Robert C. Broomfield
Presiding Judge, Superior Court
of Maricopa County, Arizona

Honorable Wilfred W. Nuernberger
Judge, Separate Juvenile Court
of Lancaster County, Nebraska

Honorable Lawrence H. Cooke
Chief Judge, Court of Appeals
of New York

Honorable Kaliste J. Saloom, Jr.
Judge, City Court of Lafayette,
Louisiana

Honorable Mercedes F. Deiz
Judge, Circuit Court of Oregon

Honorable Joseph R. Weisberger
Associate Justice, Supreme
Court of Rhode Island

Honorable Roland J. Faricy
Judge, Municipal Court of
Ramsey County, Minnesota

Honorable Robert A. Wenke
Judge, Superior Court of the
State of California for the
County of Los Angeles

DIRECTOR: Edward B. McConnell

DEPUTY DIRECTOR FOR PROGRAMS: John M. Greacen

CAT ADVISORY COMMITTEE:

Gordon W. Allison, Superior Court Administrator, Maricopa County,
Arizona

Joy Chapper, Deputy Staff Director, ABA Action Commission to Reduce
Court Costs and Delay

William W. Madden, Deputy Director, Administrative Office of the
Illinois Courts

Doris Mauldin, National Shorthand Reporters Association

Paul Nejeleski, Staff Director, ABA Action Commission to Reduce Court
Costs and Delay

Francis J. Taillefer, Administrator of Information Services,
Administrative Office of the Courts, North Carolina

Jack E. Thompson, Superior Court Administrator, Fulton County,
Atlanta, Georgia

CAT ANALYSIS PROJECT STAFF

Richard W. Delaplain, Project Director

Mary Louise Clifford, Staff Associate

Terence E. Hahm, Senior Staff Associate

Dana Patton, Project Secretary

Copyright © National Center for State Courts.

National Center Publication No. R-0058

Printed in the United States of America

Table of Contents: Executive Summary

This Executive Summary parallels the complete report, Computer-Aided Transcription in the Courts, and is largely derived from it. Consequently, the entire table of contents of the full report is given here in order that the reader will see what additional material can be found in the complete project report. Page numbers are also presented here indicating the location of material in this Executive Summary. Only selected figures are included here, as the List of Figures indicates, and none of the tables from the case studies in Part II of the complete report.

Acknowledgements

The Computer-Aided Transcription (CAT) Analysis Project was undertaken by the National Center for State Courts to provide a current assessment of the state of the art and to identify cost-effective CAT management models for differing state court environments.

An Advisory Committee, listed on page iii, provided project staff with valuable comments, suggestions, and discussions. The continuing cooperation and assistance of the National Shorthand Reporters Association and the American Bar Association, through participation in the Advisory Committee, broadened the scope of the project. The National Shorthand Reporters Association also provided guidelines for screening CAT reporters, found in Appendix D of the complete report.

Staff are particularly grateful to dozens of shorthand reporters across the country who patiently responded to many questions and requests for information. The court officials in those courts that are using CAT systems were also generous with their time, as were the vendors who are marketing CAT systems. Without the cooperation and interest of these many individuals, the information in this report could not have been assembled.

	Full report page	Executive Summary page
Management overview	1	
Introduction	3	1
Part I: <u>State of the Art</u>	5	3
Section 1: Cat technology	7	3
What is CAT?	7	3
How has CAT evolved in the last few years?	8	4
Current CAT technology	9	4
Type A configuration	11	
Type B configuration	14	
Type C configuration	15	
Section 2: Using a CAT system	17	7
Shorthand style	18	
Dictionary building	19	
CRT text-editing	21	
Adapting shorthand style	22	
Scopers/editors	23	
Scheduling the CRT	24	
Scheduling the CAT system	25	
Shortcuts	26	
Section 3: CAT and the court reporter	29	8
What reporter skills are required by CAT?	32	
Assessing CAT efficiency	36	
Reporter training on CAT	38	
Reporter motivation	38	
Section 4: CAT in the courts	41	8
Section 5: Future developments in CAT	43	11

	Full report page	Executive Summary page
Part II: <u>CAT Case Histories/Cost-Benefit Studies</u>	45	13
Introduction to Part II	47	
Section 1: Case history #1: Court A	53	
CAT site environment	53	
Operations in Court A	54	
Costs in Court A	57	
Benefits to Court A	59	
Conclusions	62	
Section 2: Case history #2: Court B	65	
CAT site environment	65	
Operations in Court B	66	
Costs in Court B	68	
Benefits to Court B	68	
Conclusions	71	
Section 3: Case history #3: Agency Y	73	
CAT site environment	73	
Operations in Agency Y	75	
Costs in Agency Y	76	
Benefits to Agency Y	78	
Conclusions	82	
Section 4: Case history #4: Agency Z	85	
CAT site environment	85	
Operations in Agency Z	86	
Costs in Agency Z	88	
Benefits to Agency Z	90	
Conclusions	91	
Section 5: Case history #5: Court P	93	
CAT site environment	93	
Operations in Court P	94	
Costs in Court P	96	
Benefits to Court P	97	
Conclusions	99	
Section 6: Case history #6: Court Q	101	
CAT site environment	101	
Operations in Court Q	101	
Costs in Court Q	103	
Benefits to Court Q	104	
Conclusions	105	

	Full report page	Executive Summary page
Part III: <u>Can Your Court Skin a Cat?</u>	107	15
Introduction to Part III	109	15
Section 1: Conclusions from case studies	110	15
Cost savings	110	15
Time savings	111	17
Impact of the court environment on costs and benefits	112	17
Section 2: Can your court make CAT technology work?	115	20
Assess your court's commitment to the efficient operation of a CAT system	115	20
Assess your reporters' commitment to efficient operation of the CAT system	119	20
Section 3: Costing methodology	125	21
Comparison of per-page costs for manual and CAT transcript production support	125	22
Calculation of break-even point for a CAT system	128	23
Calculation of annual system production	129	
Section 4: Intangible and other benefits	133	25
Time savings	133	
Transcript security	134	
Setting of standards	134	
Reporter morale	135	
Cost control	135	
Non-court benefits	135	
Section 5: Examine alternate management strategies	137	25
Court management	137	
Reporter management	137	
Private agency management	138	

	<u>Full report page</u>	<u>Executive Summary page</u>
Part IV: <u>Implementing a CAT System</u>	141	27
Introduction to Part IV	143	
Section 1: Selecting a CAT system	145	
Points to be covered in an RFP	146	
Section 2: Guidelines for system management	151	
Appoint a CAT coordinator	151	
Determine financial responsibilities for all components of the CAT system	152	
Screen reporters	156	
Establish monitoring procedures	156	
Execute the implementation guidelines	160	
Section 3: Implementation milestones for a cost-effective CAT system	161	
Glossary	177	
Appendix A: CAT System Configurations and Vendor Descriptions	185	31
Appendix B: CAT Systems in State Courts	241	33
Appendix C: CAT Production Statistics	245	
Appendix D: Guidelines for Screening Reporters to Use CAT	251	
Appendix E: Computation of Net Per-Page Costs	257	

List of Figures

	<u>Full report page</u>	<u>Executive Summary page</u>
Figure 1: CAT installations as of 1/15/81	12	5
Figure 2: Three basic CAT configurations	13	6
Figure 3: Monthly CAT production statistics	31	9
Figure 4: Time requirements for five transcription methods	34	
Figure 5: Comparison of time involved in steps in shorthand transcription process	35	
Figure 6: Hypothetical cost of six reporters' annual production of 54,000 pages of transcript	50	
Figure 7: Costing methodology for comparative costs of manual and CAT transcription	127	
Figure 8: Costing methodology for calculation of break-even point on a CAT system	130	
Figure 9: Methodology for estimating annual system production during first three years of production	131	
Figure 10: Sample CAT worksheet	157	
Figure 11: Sample CAT coordinator log	159	
Figure 12: Implementation milestones for a cost- effective CAT system	165	28
Figure 12: Option 1-A: Implementation milestones for a cost-effective CAT system	167	
Option 1-B: Projected page production according to implementation milestones	168	
Option 1-C: Projected cost per page at the implementation milestone levels	169	
Option 1-D: Break-even points (in years) for Option 1 configuration	170	
Option 2-A: Implementation milestones for a cost-effective CAT system	171	
Option 2-B: Projected page production according to implementation milestones	172	
Option 2-C: Projected cost per page at the implementation milestone levels	173	
Option 2-D: Break-even points (in years) for Option 2 configuration	174	

List of Tables

	<u>Page</u>
Table A-1: Total CAT transcript production in Court A	54
Table A-2: Transcript volume of Court A reporters on CAT	55
Table A-3: Total transcript fees paid by the county in Court A	56
Table A-4: System costs in Court A for one year of CAT transcription support	58
Table A-5: Average time to file transcript in Court A .	60
Table A-6: Cost of substitute reporters in Court A in 1979	61
Table B-1: CAT transcript production in Court B during first year of operation	67
Table B-2: System costs in Court B for one year of CAT transcription support	69
Table B-3: Increase in volume and decrease in transcript filing time for Reporter 1 . .	70
Table Y-1: Agency Y transcript production 1978-1980 . .	76
Table Y-2: System costs in Agency Y for one year of CAT transcription support	77
Table Y-3: Appeal transcript extensions requested by Agency Y reporters	79
Table Y-4: Appeal transcripts filed by Agency Y	80
Table Z-1: Felony appeal transcript production in the general jurisdiction court	87
Table Z-2: System costs in Agency Z for one year of CAT transcription support	89
Table Z-3: Number, length, and time to file felony case appeal transcripts in the general jurisdiction court	90
Table P-1: Transcript production of four CAT reporters in 1980 including time to submit transcripts	94
Table P-2: CAT production during the first ten months of operation	95
Table P-3: System costs in Court P for 10 months of CAT	96
Table P-4: Number of transcripts submitted and average days to file in 1980 for four CAT reporters	98
Table Q-1: Appeals transcripts produced in Court Q . .	102
Table Q-2: System costs in Court Q for one year of CAT transcription	103
Table Q-3: Length of time to file appeal transcript in Court Q	104

This Executive Summary gives only an overview of the contents of the full report entitled Computer-Aided Transcription in the Courts, and is written for court officials who want a better understanding of what CAT is and how it works. Anyone who is seriously considering implementing a CAT in a state court needs all the information contained in the full report in order to evaluate the court's potential for operating a cost-effective CAT system.

Copies of the full report can be obtained from

Richard W. Delaplain, Director
 CAT Analysis Project
 National Center for State Courts
 300 Newport Avenue,
 Williamsburg, Virginia 23185
 (804) 253-2000

CAT Analysis Project staff are also available to answer questions or provide technical assistance to courts and other agencies contemplating CAT implementation.

Introduction

The review by an appellate court of proceedings in a trial court or the review by a trial court of grand jury proceedings, arraignments, and preliminary hearings usually requires a verbatim record of the proceedings. Court reporters are employed to take down the verbatim record, and to prepare a transcript of the record for the reviewing court. The translation of the shorthand symbols into English and the typing up of the record is a time-consuming, labor-intensive process.

Many courts are facing mounting difficulty in preventing delays caused by time-consuming manual preparation of transcripts as case volume grows, and in supporting the rising salaries and fees involved in transcript production. These growing problems are focusing increasing attention on the need to effectively manage court reporting resources, as well as to examine alternate ways of making the court record. Related issues include the skills required of an efficient court reporter, standards for measuring proficiency, standards for timely submission of transcript and the sanctions necessary to enforce these requirements, accountability, and the role of the court in operational management of court reporting resources.

Several groups are concerned with aspects of these issues. Previous studies by the National Center for State Courts have analyzed court reporting services in several states, management of court reporting services,¹ and the use of alternate methods of making the record. The American Bar Association Action Commission to Reduce Court Costs and Delay is examining alternate appeal processes that may reduce reliance on full transcripts. The National Shorthand Reporters Association is working on standards and tests for certification of a CMR--certified managing reporter.

This report will deal with only one aspect of court reporting--the transcription of shorthand taken by a court reporter on a stenotype machine, which is the predominant shorthand method used to record trial court proceedings. (Pen writing, stenomask, and audio or video recording are expressly outside the scope of this study.) Further, this report will deal with only one method of stenotype transcription--the use of a computer to translate machine shorthand notes into English. Computer-aided transcription (CAT) is designed to reduce the amount of time required to prepare the transcript by transferring to a computer the time-consuming functions of translating shorthand notes into English.

¹Greenwood, J. Michael, and Douglas C. Dodge, Management of Court Reporting Services (Denver, Colorado: National Center for State Courts, 1976)

The effective use of CAT is only one aspect of measuring the productivity of stenotype reporters. This report does not deal with the whole question, but only with the computer's potential to assist in increasing productivity. To assess CAT, both court managers (judges and administrators) and court reporters need to know whether CAT technology has advanced to a level that makes it a viable, cost-effective, and time-saving alternative to the traditional manual method of transcribing court reporters' stenotype notes. They also need to know what potential it holds for stabilizing or reducing transcript costs while reducing court delay by speeding transcript production. The answer to both these questions will, of course, depend on how effectively CAT can be managed and operated within differing court environments.

The state of the art in CAT technology is still evolving. When this study began, there were seven vendors with operating CAT systems. One of these systems was sold to another vendor, who now offers two systems, while a second vendor (the only vendor who offered only a service bureau approach to CAT) went out of business in December 1980. At least two additional companies are developing CAT systems for future markets. Since these were not considered viable systems at the time this study was completed, they could not be included in this report. Likewise, significant technical advances now under development by existing CAT vendors could not be included because they were still in research and development at year end 1980.

Ten trial courts and one appellate court have already implemented CAT systems. Some court efforts in this area have been minimally documented, most have not. This Executive Summary is based on the complete report of a fourteen-month study by the National Center for State Courts to evaluate the use of computer-aided transcription in the state courts. The state of the art of computer-aided transcription at the end of 1980 is presented first. The experience of state courts using CAT systems is then analyzed, and their experience compared with that of free-lance reporters using CAT in the private sector. Conclusions are drawn to provide guidance to other courts in deciding whether and when to implement a CAT system. A universal cost-benefit methodology is provided for use by courts regardless of their particular operating environment. A final section outlines management strategies for effective use of CAT, as well as methodology to monitor and evaluate system performance.

Part I: The State of the Art

Many courts are having problems producing transcripts within mandated time periods with their present reporting resources. There may be any number of reasons for this situation, including inadequate standards for hiring reporters, lack of enforcement of statutory requirements for submission of transcripts, and lack of management of court reporting resources. This report will not attempt to analyze the reasons for transcript delay, except in so far as volume of transcript work is a factor causing delay, and CAT can be used as a viable tool to assist courts and court reporters in speeding up the transcription process, thereby handling a larger volume of transcript more expeditiously.

Section 1: CAT technology

What is CAT?

Computer-aided transcription technology eliminates some of the time-consuming steps in the transcription process. With CAT technology, the reporter produces shorthand notes in the same manner with a stenotype machine. However, this CAT stenotype machine simultaneously produces a magnetic tape cassette copy of the stenoform notes. The cassette is processed by a computer that translates the stenographic keystrokes to English language. The reporter then reviews the transcript in one of two ways. A paper copy of the transcript can be produced via high speed printer, or the reporter can edit the transcript on a cathode ray tube (CRT) video terminal (akin to a TV screen with a keyboard), which permits the making of immediate corrections of untranslated stenoform outlines, word conflicts (instances where a set of stenographic keystrokes are defined as more than one word in the computer translation dictionary), or punctuation in the transcript. Following this edit, a printer can quickly and economically produce one or more copies of the transcript, which will be free of typographical errors.

CAT has the potential to reduce the involvement of the reporter to the original note taking and one edit cycle, thus saving the court reporter's time. After a reporter's computer translation dictionary has been fully developed and shorthand style adapted, the reporter should be relieved of some of the tedious tasks of reading, translating, dictating, editing, and typing transcripts. The computer should perform these tasks many times faster and has the potential to perform them more economically and with greater accuracy than traditional methods. In turn, the court reporter should be able to devote more time to recording court proceedings, where shorthand skills and abilities

are most productive. This should reduce the need for substitutes and save the court money. Increased productivity should help to keep pace with growing transcript demands or with periodic surges in demand, as well as allow sufficient time to proofread final transcripts to ensure high accuracy.

How has CAT evolved in the last few years?

A number of substantial changes have occurred in CAT, the most significant of which has been the development and reporter acceptance of user-controlled translation (or stand-alone) CAT systems. Several of the earlier vendors are no longer in business. Those who are have significantly modified both their CAT hardware and software.

Current CAT technology

At the end of 1980, there were five CAT vendors with viable operational systems. All five offer various versions of a stand-alone CAT system. One also offers a modified version of the service bureau approach to CAT. Four vendors are new since 1977: Cimarron Systems of Greenville, Texas, which has been purchased by Stenograph Corporation; Reporter's C.A.T. Systems, Inc., of Greenville, South Carolina; Translation Systems, Inc., of Rockville, Maryland; and Xscribe Corporation of San Diego, California. One of the vendors, Stenograph Corporation of Skokie, Illinois, was in business in 1977, but has significantly modified its CAT system since then, and has also purchased the Cimarron system. Only one vendor, Baron Data, Inc., of San Leandro, California, is marketing the basic system (with modifications) it initiated in 1975-76. Baron recently announced the availability of a less sophisticated and hence less costly version of its basic system. Vendor estimates of the number of systems operating at the end of 1980 are shown in Figure 1.

At the present time, the five CAT vendors offer three general CAT operating configurations. These three configurations are depicted in Figure 2.

In two of these configurations (Type A and Type B), the user (an individual reporter, free lance reporting firm, or court) who purchases or leases the CAT system controls the translation process on his own computer. In the other configuration (Type C) the CAT vendor controls the translation process on his computer, but the user controls the editing and printing processes. There are variations in each of the configurations depicted in Figure 2, depending upon the particular vendor involved. Some of the major variations involved in the basic configurations are discussed in Section 1 of Part I of the full report. A more detailed description of the possible variations for each vendor can be found in the CAT vendor profiles in Appendix A to the complete report.

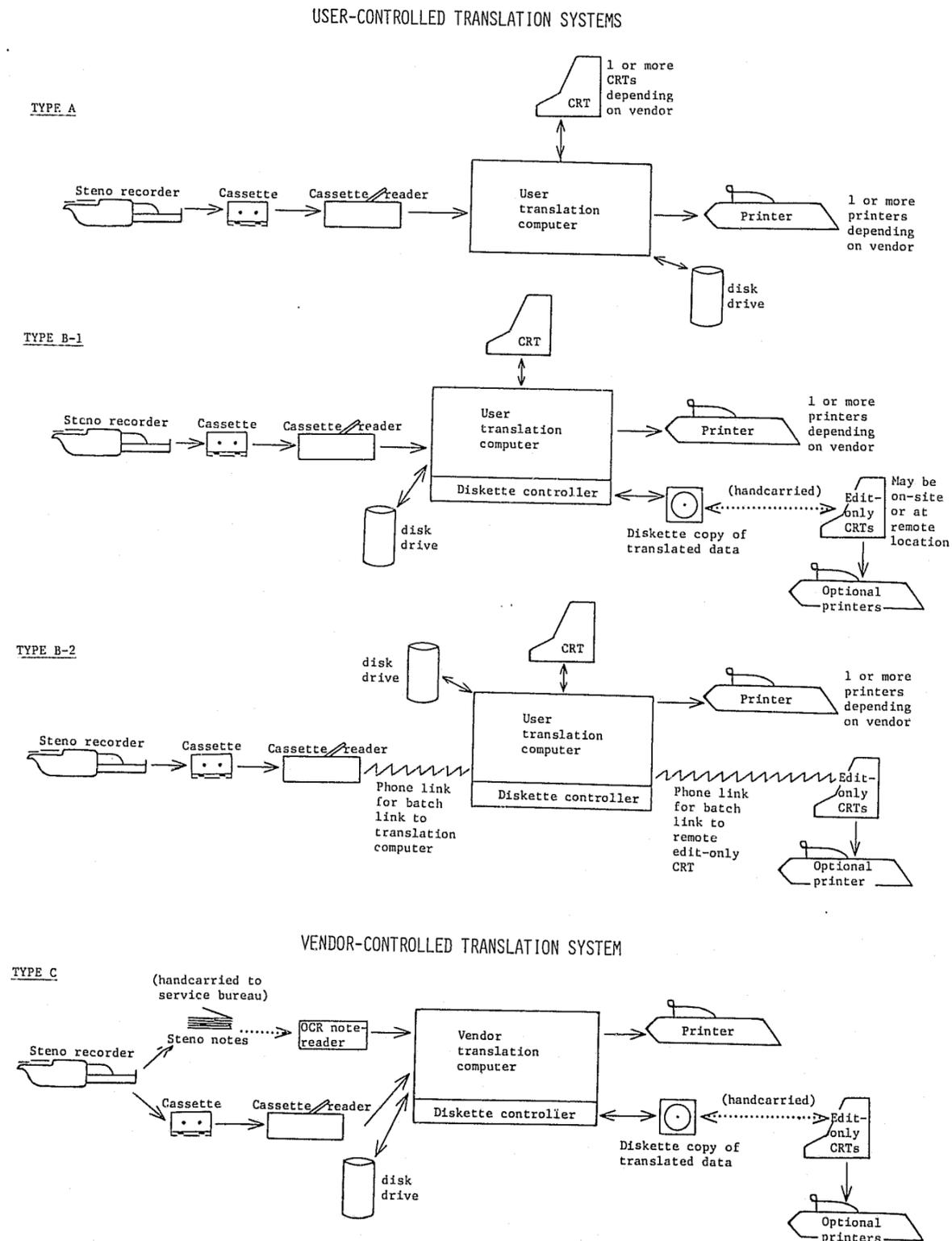
Figure 1: CAT installations as of 1/15/81

Vendor	Total number of CATs installed*	Number of court-sponsored CATs installed or ordered	Number of reporters using vendor system
Baron Data	250	9	1,500
Reporter's C.A.T., Inc.	1	-0-	14
Stenograph Corporation Cimarron System Steno-CAT System	75	2	140-170
Translation Systems, Inc.	18	5	81
Xscribe Corporation	1	-0-	30
Totals	345	15	1,765-1,795

*Does not include systems ordered but not yet installed.

Note: Based on a survey of the vendors regarding the number of systems that have been ordered for implementation during early 1981, and projecting these figures out for the entire year, it is estimated that the total number of CAT systems installed and pending installation may exceed 600 by the end of 1981.

Figure 2: Three basic CAT configurations



Section 2: Using a CAT system

Although the several CAT vendors offer an assortment of CAT services and equipment (described in Appendix A to the complete report), CAT users, be they official court reporters or private reporters, must all execute certain basic functional steps in utilizing a CAT system. Several years' experience in operating CAT systems now indicates that the efficiency with which each of these steps is performed will determine the time spent in CAT-related activities and ultimately the cost-effectiveness of this transcription system as opposed to the traditional dictation-for-typist transcription method.

The crucial functional steps that determine the efficiency of any CAT system are the following:

1. Taking a clean and consistent style of shorthand notes on a modified stenotype device.
2. Building an adequate dictionary for the computer to use in translating the stenotype notes, or adapting to a predefined dictionary.
3. Learning the editing process on the CRT in order to understand how shorthand style affects the quality of the translation.
4. Adapting shorthand style to the computer translation requirements. (Clean, consistent style is more important than the particular "school" of shorthand used.)
5. After the reporter shorthand style is adapted to CAT and volume is high enough that assistance is needed, then training a scoper or editor so reporters can spend time reporting rather than editing.
6. Scheduling the use of the CRT if more than one editor/reporter uses it.
7. Scheduling the CAT system operation to continuously perform three functions (translating, editing, printing) simultaneously. (This is particularly important with CAT systems that do not support multiple on-line CRTs that can perform different functions on different jobs simultaneously.)
8. Learning shortcuts in computer operation, such as "globals" and "includes" to enter repetitive material, that save transcript production time.

These functions can all be performed by the reporters themselves, as is done in some private agencies, or numbers 5, 6, 7, and 8 can be performed by someone other than a reporter. Although there are vigorous proponents of both arrangements among CAT users, agreement is fairly consistent across the country that success in performing these eight functions is crucial to the efficient operation of a CAT system. A detailed discussion of each of these functions is found in the full report.

Section 3: CAT and the court reporter

To compare the courts' production figures with other non-court CAT users, samples of production data were collected from four other types of CAT users. Figure 3 provides a comparative summary of data for each type of CAT user. Detailed data for each type of CAT user, which are summarized on Figure 3, are contained in Appendix C to the full report.

Comparative data contained on Figure 3 indicate that CAT systems operated within state courts are currently the least productive of the five types of CAT operations reviewed. This is true with regard to the total pages of transcripts produced on a monthly basis, the average number of pages produced per editing station (CRT), and the average pages per month produced by each reporter. While these data are disquieting, they raise questions more than they provide answers: What reporter skills are required by CAT? How can reporter efficiency on CAT be assessed? How should reporters be trained on CAT? How is reporter motivation encouraged?

Each of these questions is discussed in detail in Part I of the main report.

Section 4: CAT in the courts

Usage of CAT technology by court reporters is much more extensive than actual installation of CAT systems within courts. A phone survey of courts and private reporting firms conducted by this project indicated that at the end of 1980 there were about 345 CAT computers operating in approximately 280-300 sites (some of the private agencies have more than one computer). Of these 300 sites (which include the eleven operational and 5 planned court sites), it was estimated that approximately 120 sites (40 percent) were directly or indirectly (official reporters using private agencies as a service bureau) involved in the production of official court transcripts. It was estimated that approximately 225 reporters who devote most of their time to official state or federal court reporting (on a contractual basis), produce their transcripts on a CAT in a private agency. An estimated additional 115 private reporters using free-lance agency CAT systems

Figure 3: Monthly CAT production statistics (December 31, 1980)

Average numbers and range of numbers for monthly CAT production. All systems have more than 1 reporter and have been operational for at least one year.

Environment in which CAT system is operating and number of systems	Average number of CPUs	Average number of CRTs	Average number of reporters	Average number of scopers	Average monthly page volume	Average pages per CRT	Average pages per reporter
6 State courts operating CATs for more than one year	1 (1)	2.5 (1-6)	7.7 (3-12)	1 (.5-2)	2,635 (1,200-4,500)	1,590 (400-3,460)	345 (120-500)
5 Private agencies doing predominantly official state court transcripts	1 (1)	2.2 (1-4)	9.4 (4-22)	.7 (0-3)	5,260 (3,000-10,000)	2,390 (1,500-4,800)	560 (440-800)
12 Private agencies where up to 50% of their work involves the production of official state and/or federal transcripts	1.3 (1-2)	2.7 (1-5)	7 (2-15)	1.1 (0-4)	6,484 (3,000-12,000)	2,430 (1,500-4,200)	925 (670-1,500)
9 Private agencies doing no state or federal official court transcripts	1.2 (1-2)	3 (1-6)	7.4 (2-14)	1.2 (0-3)	7,090 (1,800-13,000)	2,360 (1,670-5,000)	950 (600-1,750)
6 Private agencies where all or a large part of work involves production of official federal court transcripts	1.8 (1-3)	3.2 (2-6)	7 (3-15)	2.2 (0-6)	9,485 (3,900-18,000)	2,995 (1,951-3,600)	1,355 (770-1,430)

Source: Appendix C

spent up to half of their time on official court work. Hence, out of the estimated 1,800 reporters using CAT systems, approximately 325-375 of them were involved with official court reporting. A quarter of these worked on CATs in state courts.

At the end of 1980 eleven state courts (ten trial courts and one appellate court) had a CAT system wholly sponsored by the court. Five more state courts were implementing CAT. These sixteen systems collectively involve about 88 official reporters. Six of the operational court CAT systems had been operational for more than one year. (Appendix B to this report lists each of the currently operational court CAT systems.) An analysis of these six courts at the end of 1980 showed that they had an average of 7.7 reporters (the range is from 3 to 12) on each CAT system. All of them employed a scoper to assist in operating the system and editing. Four of them had more than one CRT. The average monthly page volume put through these six systems was 2,635 pages of finished transcript, which was about 345 pages per reporter. The range was from an average per reporter of 120 pages in one court to 500 pages per month in another. Figure 3 in Part I, Section 3 compared these production levels with four other types of CAT users and indicated that court CATs are the least productive of the operations surveyed.

The volume of transcript produced is, of course, not the only question pertinent to CAT. The cost of using the technology, compared to the cost of traditional manual transcript production methods, must also be assessed and is the subject of Part II of the complete report. Potential savings in the time taken to prepare a transcript and in the promptness with which it can be submitted are also evaluated in Part II as a potential benefit deriving from CAT technology. Another potential benefit to be assessed, and not of necessity reflected in the comparative data in Figure 3, is whether CAT can permit the reporter to spend more time taking shorthand and less preparing transcripts, thus reducing the number of substitute reporters or additional reporters needed by courts now and in the future.

Another area of uncertainty pinpointed by the data on Figure 3 involves the operating procedures and management of CAT systems in differing environments. Were the currently operating court CAT systems carefully planned and are they being well managed? What were the expectations of a court initiating a CAT system? How well was the system's implementation coordinated among reporters, judges, and court administrators? In general, for almost any program involving transcript production in a trial court to succeed, there is a requirement for coordination, cooperation, and commitment by the reporters, judges, and administrators. To the extent that any one segment chooses not to cooperate or demonstrates a marginal commitment to the program, relatively poor results can be predicted. To what extent have these types of problems negatively impacted the number of report-

ers using court-controlled CAT systems and their ability or willingness to produce transcript volumes comparable to private agencies producing official court transcripts? This general area of planning, coordination, management, and commitment is addressed in Part III of the complete report.

The basic assumption of this report is that effective use of CAT should not involve costs for transcription support above those that the court is now paying, and that use of CAT will result in increased productivity and time savings. Responsible court officials will have to decide in each situation what level of effectiveness is appropriate and necessary in their particular circumstances. The complete report demonstrates how CAT can be both cost-effective and a time saver, with the assumption that the material presented in Part III will permit the potential court user to assess what level of cost-effectiveness and time savings are possible and appropriate in a particular court environment.

Section 5: Future developments in CAT

During the last five or six years, CAT systems available to users have evolved from service bureau based systems to stand-alone systems where all hardware, software, and peripheral equipment is under the direct control of the user. This evolution has been made possible by advancements in minicomputer hardware capabilities and streamlined software developed by vendors. Current research and development by vendors will permit this trend to continue, with more computing power and more sophisticated software being implemented on smaller computers. Some of these systems may be marketed at lower absolute dollar figures, but the state of the art is likely to evolve to systems which may not cost less in absolute dollar terms, but will provide greatly increased computing power per dollar invested when compared to the current system configurations. These improvements will permit increased throughput, lower per-page costs, and quicker payoffs for systems.

An additional factor that is going to have a positive impact on CAT use will be the marketing of stand-alone edit-only terminals at reduced prices compared to today's systems. These will allow small and medium systems to be much more flexible than is currently possible, and will also encourage individual reporters to purchase or lease their own edit-only terminals for home or office usage. In short, reduced prices and increased capabilities on stand-alone edit-only terminals should significantly increase the number of reporters using CAT. The availability of relatively low-cost edit-only terminals in conjunction with more sophisticated telecommunications capabilities will add even more flexibility to small systems, enable more geographically remote reporters to make use of CAT, increase throughput per dollar in-

vested, and decrease per-page costs when compared to current CAT technology.

Some vendors will be offering distributed networks for CAT systems. These distributed nets, in combination with greatly increased disk capacities, will offer large-scale CAT users increased flexibility, system redundancy, and greatly increased throughput at moderately increased prices. Again, the major change will be in the area of increased computing power per dollar invested. The absolute dollar amounts invested will probably rise; the per-page costs of producing transcript should, however, remain the same or decrease on these large systems.

Two CAT vendors, rather than alter the computer operating system, offer software that runs as an application program on the computer. That is, this software runs under the control of the operating system software provided by the computer manufacturer. If the core memory and disk memory of either vendor's computer is increased (e.g., from 128KB to 256KB core memory and from 20MB to 50MB disk memory), additional applications such as word processing, case indexing, or simple accounting could be run simultaneously with CAT.

Only one of these systems runs on hardware that is upwardly compatible. This means that CAT software could be run on a much larger computer produced by that computer manufacturer. If a court is in the market for data processing technology (for case tracking, indexing, accounting, notice preparation, etc.) and it purchased this manufacturer's computer, a CAT system could be run simultaneously with other data processing applications. Thus the court would buy only one computer rather than two. In addition, the combination of CAT and data processing activities would maximize the usage of the computer, thus actually decreasing the cost per use. As indicated, only one vendor can provide a CAT system that will operate in this mode. It is anticipated that other vendors will offer similar software options in the future. This development should have the effect of decreasing the front-end investment in hardware involved in installing a stand-alone CAT system.

The overall future of CAT can be summarized as probably involving more sophisticated stand-alone systems, increased computing power and throughput per dollar invested, and significant increases in the numbers of reporters using CAT. The private sector will no doubt embrace these technological advancements. There is no reason why courts cannot take advantage of these advances as well. Whether they do will depend to a great extent on whether courts can afford to continue using machine writing reporters without some control on the costs involved in production of the record. In courts using machine writers, there is little doubt that CAT use will increase, regardless of whether the court finances and owns the CAT hardware and software.

Part II: CAT Case Histories/Cost-Benefit Studies

If one considers the total cost to the court of producing transcript, then the expenses associated with transcription support are a very small proportion (5% to 6%) of the total. In the full report, a hypothetical example of a six-judge court with six full-time reporters and one full-time substitute is used to illustrate.

Part II addresses the cost-effective use of CAT systems in courts today, and the benefits that can be realized by courts in using CAT.

When it became clear that experience with CAT systems operated by courts could not provide a complete survey of the potential of the systems for cost savings or time savings or of the range of management techniques necessary to achieve these benefits, the CAT Analysis Project staff chose to examine three different kinds of CAT situations in order to explore as wide a range of options for the state courts as possible:

1. Case histories are presented of two courts that installed the computer at court expense and have been using it for more than a year--case histories #1 and #2.
2. Two private agencies that have contracts to provide reporting services to trial courts are examined in case histories #3 and #4.
3. Two courts that installed CAT systems in the spring of 1980 are examined in case histories #5 and #6 to see if they have avoided some of the problems that have arisen in courts that pioneered in the use of CAT. One of these new systems (case history #6) is of particular interest because it involved a different CAT vendor from that of case histories 1 through 5.

Each of the case histories provides pertinent information on the environment in which the CAT system was installed, and on the costs and benefits in that situation of using computer-aided transcription. The following outline is used for each.

CAT Site Environment
Court/agency description
Statutory requirements
Transcript delay
Implementation history of CAT (hardware)
Number of reporters trained/training

Operations

- System use
- Number of reporters using system
- Current production
- System management

Costs

- Lease/purchase
- Data entry devices
- Dictionary and training costs
- Supplies
- Scoper costs

Benefits

- Production time of CAT compared to manual transcription
- Effect on transcription requirements
- Effect on reporter workload
- Translation income
- Reduction in substitutes
- Intangibles

Conclusions

General comments of relevance to CAT management conclude each case history.

The broad conclusions that derive from the case histories and other site visits introduce Part III of the full report and of this Executive Summary.

Part III: Can Your Court Skin a CAT?

Section 1: Conclusion from case studies

The benefits that could result from use of computer-aided transcription in the courts can be grouped under three broad headings: cost savings, time savings, and intangible benefits that cannot be quantified. It is clear from the case studies and other sites visited that all three are achievable using CAT. In short, CAT technology can and does work, but the way in which it is used in the court environment will determine its efficiency.

Whether a CAT system is a cost-beneficial investment for a court will be determined by how CAT system use is integrated into a particular court's management strategies, including managing court reporting resources and services. In a court that does a good job of managing its reporting resources, CAT can be smoothly integrated into court operations and can be expected to achieve the intended goals of time and cost savings. In a court that either does not manage its reporting resources or does it poorly, a successful CAT operation is not likely.

CAT is not a passive technology. To be successfully implemented in a court, two requirements must be met: first, the court must manage and control the allocation of court reporting resources; and second, the court must actively manage the operations of its CAT system. While each of these axiomatic requirements have corollary requirements (which are discussed in Section 2), failure to achieve these overall requirements will likely result in an unsuccessful court-sponsored CAT operation. If a court assesses its operations and feels it cannot achieve these two overall requirements, then CAT is better left to the private sector.

Cost savings

The two private agency studies (Y and Z) prove clearly that CAT can produce a page of transcript for the same as or less cost than a page of transcript produced manually. Agency Y is producing 58,000 pages of CAT transcript a year for \$.18 less per page than its manual transcription costs. Agency Z's cost for 36,000 CAT pages annually is \$.03 higher per page than the cost of manual production, which represents increased supply costs.

Unfortunately, only one of the eleven courts presently using a CAT system has been able to achieve a cost-effective operation, and that occurred six months after the site visit after substantial changes in reporters using the system. Three of the courts for which case studies are presented in the complete report were subsidizing CAT system page costs ranging from \$.19 to \$2.29

per page more than manual transcription would cost. The cost involved in the fourth court studied indicated that it was clearly not a viable candidate for CAT implementation.

How can the difference be explained? First of all, the profit motive of free-lance reporters is basic to their switch to CAT. They believe, based on their evaluation of available evidence in the approximately 280 free-lance agencies using CAT, that they can increase their productivity on CAT, and hence increase income. In the courts, the impetus to increase productivity probably comes from the court administrator, and the systems have been presented to the reporters as a way of easing their workload and expediting output. Although the reporters appreciate these benefits and subsidies are provided to cushion the reporters' training period, the fact that their income is not greatly affected by their level of productivity often negates the urge to push hard for increased or speedier production.

A second factor affecting private reporter motivation to use CAT efficiently is that the agency in which the reporter works may clearly expect good performance on CAT, and job status may depend on it. Courts have not been able or willing to impose the same kind of criteria in managing their court reporting resources, whether transcription is done manually or on CAT. The problems of motivation are basic to all court reporting; effective management and enforceable sanctions are the keys to productivity and timeliness. Where these are lacking, efficiency cannot be achieved.

By and large the courts have been unable to achieve complete reporter commitment to CAT. Not only have they not required all reporters to adjust to CAT, but they have not even required those reporters adopting computer-aided transcription to put all their work through the computer or to put it through expeditiously. Some reporters have insisted on doing some of their work manually when it was more convenient, well after the time they should have been proficient on CAT. This has limited the volume of transcript produced on CAT, thus decreasing economic returns. Another limiting factor has been the slowness with which many of the court reporters using CAT have adjusted to the technology. In fact, the case studies clearly indicate that there are a number of reporters who have been on CAT for a year or more who are not using the system efficiently. They are taking up system time that might be more effectively used by other reporters, and are slowing down the whole operation of the system. In some instances this situation has resulted from the court's refusal to give the reporters sufficient time out of court to adequately train on CAT and their having to spend their free time working to meet existing transcription production demands. In other instances, the problem is attributable solely to lack of reporter commitment to use the court's CAT system.

Time savings

Some of the court reporters using CAT systems can produce transcripts in a more expeditious manner than non-CAT reporters in the same court. However, some of the non-CAT reporters have equally good records for timely production of transcripts.

The two private agencies studied happened to be located in states with strict rules for transcript submission, and enforced sanctions for not meeting the requirements. Their performance indicates clearly that in their jurisdictions deadlines can be consistently met, regardless of what kind of transcription method is used. In the case of those two private agencies, however, the reporters clearly feel that using CAT is a very substantial aid in simplifying and speeding transcript production.

In two of the court case studies, at least two reporters have substantially reduced the time required to produce a transcript, but in the two states involved, appellate court case backlog is so extensive that transcript delay merely reflects appellate delay and is not clearly a factor causing it. In these two states little emphasis is placed on timeliness of transcript submission because of the appellate court's overwhelming case backlog. Consequently, reporters may be reducing the time spent in preparing transcripts by using CAT, but few cases are being submitted to the appellate court more speedily.

In other case studies, as well as in courts visited that were not used as case studies, it appeared that some reporters were able to produce transcript in a more timely fashion using CAT, but that these transcripts were then held the usual length of time before being submitted to the court. In these instances, the time savings associated with CAT were, of course, lost to the judiciary.

A different aspect of the achievement of time savings is that such savings quite clearly relate more to the ability, motivation, and management of the reporter than to the method of transcription used. Reporters who are intent on meeting deadlines and increasing productivity will succeed on CAT because it is a mechanism that assists them to do both. But a reporter who is not similarly motivated will probably never use a CAT efficiently. In short, reporter motivation and work habits are of critical importance in the successful utilization of a CAT system.

Impact of the court environment on costs and benefits

At the present time, CAT systems in state courts are not operating anywhere near the potential of the technology. The technology is not the problem, as success in the private sector clearly demonstrates. If the technology is not the problem, then the following factors in the court environment are hindering cost-effective use of the technology.

1. In general, the courts observed during this study have not been doing much in the way of actively managing their court reporting resources. In most instances, reporters operated independent of other reporters and basically answered only to their individual judges regarding workload, work habits, and transcript production. Some of the courts had a position which was vested with the responsibility of managing the court reporters; however, this responsibility rarely included authority, and even more rarely was the authority exercised when present. Most of these situations have evolved over time and the persons responsible for managing court reporting resources simply could not alter the existing situation. The net result was that reporters were effectively insulated from much, if not all, management oversight and accountability.

2. Court CAT systems have been marked by a lack of planning, system coordination, system support from court administration (in terms of adequate substitutes available during the start-up period, etc.), judicial support, and/or reporter motivation and cooperation.

3. In some instances, courts have embarked on a CAT implementation without any realistic idea of the potential volume available to put through the system. This has resulted from reporters refusing to divulge what their actual production (all case types) is, judges not requiring the disclosure of this information, and/or misinformation supplied by reporters. There has been a general over-estimation of how many pages of transcript reporters are actually producing.

4. The most effective utilization of a CAT system involves assignment of reporters to match workload requirements. In both Agency Y and Z, the ability of the agency to assign reporters to meet workload requirements, to demand production of all work via CAT, to demand commitment by the reporters, etc., has been the key to their success with CAT. Only one of the courts reviewed has recognized the importance of these factors and has made the changes necessary to operate the CAT efficiently.

5. The dictionary building and shorthand adjustment process should not take longer than 4 to 8 months, but some court reporters are taking much longer than this. Management must provide adequate time and substitutes and establish requirements that make this learning stage as short as possible. During that period there will be a drop in reporter productivity, and adjustments (available substitutes from pool or per diem reporters) need to be made to permit the reporter to get back up to speed as soon as possible. During this period the reporters should be monitored and held accountable and the court should expect efficiency to be achieved within set time frames.

6. Direct cost savings from use of CAT will not occur until page volume reaches the level where translation fees and reduction in substitute reporters pay the expense of running the system. In the courts surveyed, realistic appraisals have seldom been made of the volume levels that are available or needed.

7. Official state court reporters do not generally share the growing perception in the free-lance community that CAT is a logical tool for the reporting profession to adopt in order to increase productivity and reduce the transcription burden. Although official reporters are generally employees of the court, they regard themselves as independent contractors, and consider CAT equipment too expensive to finance alone. Their perception of themselves as independent contractors to the court (regardless of the actual situation) can and has negatively affected reporter ability to cooperate with each other in the efficient use of a court CAT system. Since their court employment arrangement does not offer easy ways for reporters to collectively finance a CAT system, they wait for the court to implement CAT, and then volunteer to use it. But since the court is paying for it and managing it, the individual reporters do not feel responsible for its efficient operation, even though they would like to control its operation and enjoy its benefits.

8. The indirect benefits that could accrue to the court from the use of CAT may be more important than direct cost savings. These should include a shortening in the time required to produce a transcript and the ability of reporters to handle a larger volume of transcript. Steno notes and dictionaries are available if a reporter leaves, which would permit another reporter to transcribe them if necessary. CAT steno notes should also be of high quality, and are more easily transcribable on CAT than any other way if someone other than the reporter who took them has to transcribe them. There may also be a decrease in non-court costs, such as custodial care of defendants while appeals are pending, if transcripts can be prepared more speedily.

9. The use of scopers to scan/edit is not a prerequisite to efficient utilization of a CAT system in a court environment, but is rather a mechanism for handling volume or scheduling problems. Scopers used too early in reporter training may lead to continual delay because the reporters may not be forced to clean up their shorthand.

10. The advantages to be enjoyed by reporters from use of a CAT system are not dependent upon the system's being installed in or by the court, but rather on efficient use of the system wherever it is located.

If a CAT system is to be installed in or by a court, there are a number of prerequisites that should be considered in promoting its efficient operation. Section 2 identifies these prerequisites.

Section 2: Can your court make CAT technology work?

The cost-effective use of computer-aided transcription depends on the efficient management of court reporting resources. Both court commitment and reporter commitment should be examined to determine whether the management situation in a court is conducive to a successful CAT operation.

Assess your court's commitment to the efficient operation of a CAT system

1. The court must provide for the operational management that will ensure the efficient operation of the system.
2. Efficient operation of a CAT system requires that reporters be assigned to accommodate changing workload requirements.
3. The manager responsible for a court CAT system must know the volume of transcript being produced by each reporter who is a candidate for CAT.
4. CAT reporters must work in courts producing a high volume of transcripts.
5. The judges must be willing to abide by the CAT screening guidelines and page volume requirements.
6. The court must be supportive of the reporter during the learning process.

Each of these commitments is discussed in detail in the complete report.

Assess your reporters' commitment to efficient operation of the CAT system

The commitment of your court's reporters to a successful CAT operation is perhaps the paramount requirement for an efficient CAT operation in your court. If your reporters are not demonstrably committed to the use of CAT because of personal, political, or economic concerns, the recommendation of this report is that your court not implement a CAT system.

The following reporter commitments are essential to the efficient operation of a CAT system in a court:

1. Reporters must be willing to participate in a screening process to determine which reporters should be the first to use CAT.

2. Reporters must agree to achieve a certain level of efficiency on CAT within specified time periods, even if this involves overtime work in the office rather than at home.
3. Reporters should agree to process a minimum number of pages each month through the CAT system. (This report recommends a minimum of over 700 pages a month. The explanation of the rationale is contained in the complete report.)
4. Reporters must be willing to edit their own notes at any time the notes are not clean enough to be done by a scopers.
5. Reporters should be willing to cooperate in attaining maximum scheduling flexibility of the CAT system.
6. Court reporters using CAT must agree to process all their work through CAT, and to give their court work first priority if the court has financed the CAT.
7. Court reporters should help defray the cost of a court CAT system at least up to the level of their present cost of producing transcript manually.
8. The reporters should agree that the court should retain a copy of the reporter's dictionary.

Each of these commitments is discussed in the complete report.

Section 3: Costing methodology

If a court has determined by reviewing the criteria in Section II that it has sufficient control of its reporting resources to undertake the implementation of a CAT system, the next step is to determine whether CAT will be cost-effective in that particular court. A CAT system represents a significant investment for a court or other agency. A purchased CAT system which supports 6 reporters with 2 CRTs may involve a one-time front-end investment of from \$67,000 to \$111,000, depending upon the vendor chosen. A larger system configuration that would support 9 reporters with 3 CRTs could involve a front-end investment of \$80,000 to \$132,000, again depending upon the particular vendor chosen and whether the court pays for all components of the system. In addition to these one-time start up costs, annual operating costs for maintenance contracts, supplies, software updates, etc., plus taxes on these items, could be as high as \$30,000 for a high-volume (each reporter producing 1,000 pages per month) system with the 3 CRT configuration described above. However, these front-end costs and annual costs can be offset by CAT revenues in a properly managed system. System lease prices in effect 1/15/81 are shown in the vendor profiles (Appendix A of the full report).

A court contemplating making an investment of this dimension should read the full report and study the costing methodologies and management guidelines contained therein carefully. This Executive Summary merely indicates the contents of the full report.

There are two basic types of costing methodologies that a court should undertake in determining the cost-effectiveness of CAT. First, a court should compute whether a fully implemented system (all reporters at minimum acceptable production level and all anticipated hardware in place) will be capable of producing a page of transcript at the same or a lower transcription support cost than current manual procedures. The methodology presented in Figure 7 in the full report allows a court to compute per-page transcript support costs of preparing transcripts either manually or on CAT.

Secondly, a court should compute the number of years that will be required for any proposed CAT system to break even. That is, the point at which the system has paid for itself should be computed. This computation is important in decisions regarding whether a system should be leased or purchased as well as in the selection of a vendor whose system allows the court to break even at the earliest possible time. This latter methodology differs from the cost-per-page methodology discussed above, in that the former methodology assumes a system is fully implemented with all reporters trained and up to speed. The break-even point costing methodology allows the court to account for the learning curve of reporters as they are added to the system and to compute the actual anticipated production during system implementation. The computations involved in determining the break-even point for any given CAT system are depicted on Figure 8 in the full report.

Comparison of per-page costs for manual and CAT transcript production support

Courts contemplating the implementation of a court-sponsored CAT system should determine whether a fully implemented CAT system will be capable of operating in a cost-effective manner. While the actual cost per page, in instances where CAT will require a minor increase in cost, may not be the ultimate determinant of whether a court pursues CAT implementation (because of the perceived impact of intangible benefits accruing to the court from CAT), the methodology in the full report will indicate what the actual costs of a fully implemented CAT system will be in that particular court, compared to manual transcript production costs to the court.

The key phrase to remember in using this methodology is "a fully implemented CAT system." Fully implemented assumes that all reporters who will be going on the system have been fully trained and are producing at the same level as they did before

CAT. It also assumes that all hardware that may be needed (additional CRTs, etc.) has been added. Hence, this methodology assumes an ideal state and ignores the costs and time involved in actually implementing the system. It will, however, tell you whether the system, once fully implemented, will be capable of operating in cost-effective manner. To use this costing methodology, several basic facts must be established, at least as estimates:

1. How many reporters will be using the CAT system?
2. What will be the minimum production required from each reporter per month on CAT? An accurate determination of the volume of transcript produced by each reporter is absolutely essential to setting a minimum production requirement.
3. What are the various costs associated with the CAT system being considered? (This costing must be completed for each vendor).
4. What portions of the CAT system will the court pay for and what portions will individual reporters be asked to pay for?
5. What rate will a reporter be charged for each page of transcript produced on the court's CAT system?
6. What is the cost to the court of any transcription support provided to reporters under the current manual system (e.g., supplies such as paper, typewriters, ribbons, binders, dictation equipment, etc.)?

Once these facts have been established, the court is ready to employ the costing methodology displayed in Figure 7 in the full report to determine the per-page costs for manual versus CAT transcript production support.

Calculation of break-even point for a CAT system

An alternative method of calculating the cost-effectiveness of a CAT system is to determine the number of months or years required from initial implementation of the system before the system will pay for itself and either remain a no-cost technology or provide revenue to the court for the potential replacement of the system with newer technology.

The costing methodology presented on Figure 8 in the full report provides the court with a simple means of determining the

break-even point for any CAT system. It can be used to determine the break-even point for a purchased system or a leased system, if certain assumptions are made. These assumptions include the following:

1. All reporters going on the system should get up to speed at a relatively uniform rate. See Figure 9 in the complete report for methodology to compute system output during the first, second, and third year of operation.
2. All systems, regardless of the number of reporters added to the system, should be fully implemented within three years. (The methodology could be easily adapted to a longer implementation period).
3. Hardware is allocated in a ratio of one CRT for every three reporters using the system. (This too can be altered if the court so desires.)
4. The cost of CAT supplies (continuous-form paper, printer ribbons, cassettes, spare system disks, etc.) are computed at the rate of \$.07 per page of CAT production.
5. All costs are broken down into one-time front-end costs (e.g., purchase of hardware, purchase of steno recorders, reporter training, etc.) or annual recurring costs (e.g., system maintenance, supplies, lease costs, software updates, etc.).

As in the costing methodology for comparing per-page costs for manual and CAT transcription support, which was discussed above, the court must be able to establish several basic facts as to number of reporters to use the system, their minimum monthly production, costs associated with each vendor's system, financial responsibilities, translation fees, and cost of manual transcription support. Once this information has been compiled and the assumptions listed above are considered, information should be filled in on Figure 8 (in the full report) and the appropriate calculations completed to determine the break-even point (years from day of implementation) for the system under consideration.

The methodology to determine the break-even point for leased or purchased CAT systems is divided into two parts. Figure 8, Part A in the full report permits the calculation of fixed front-end (one-time) costs associated with a given CAT system. Figure 8, Part B calculates the actual break-even point.

Section 4: Intangible and other benefits

Having determined in Section 2 whether the management of court reporting resources will permit efficient operation of a CAT system, and having assessed the financial costs of a CAT system in Section 3, the court administrator should now examine whether intangible benefits exist that could offset the expense of the computer system. The following are significant factors that should be considered:

1. Time savings and delay reduction
2. Transcript security
3. Setting of standards
4. Reporter morale
5. Cost control
6. Non-court benefits

Each is discussed in detail in the complete report.

Section 5: Examine alternate management strategies

Material presented in the case studies in Part II clearly indicated that the benefits to reporters of using CAT can be achieved without the court operating the system. A potential CAT user must consider whether court management, reporter management, or private agency management of CAT will be most appropriate for his particular environment. Each of these is discussed in the complete report.

Part IV: Implementing a CAT System

Once a court has determined that it is a viable candidate for sponsoring a CAT system (i.e., it can adequately manage its reporter resources and cost-benefit analysis indicates that the system should be cost-effective), planning for the possible implementation of a CAT system should begin. Part IV of the complete report presents implementation guidelines that should lead to a cost-effective operation. Guidelines of primary importance discussed in this part of the report involve the selection of an appropriate CAT vendor for your court, including points to be covered in a request for proposal (RFP), and the establishment and implementation of management procedures for your CAT system. Guidelines for system management are also included, and discuss the importance of appointing a CAT coordinator, of agreeing on the financial responsibility for all components of the CAT system, of screening reporters, of establishing monitoring procedures, and of executing implementation guidelines.

Figure 12 lists implementation milestones for a cost-effective CAT system. The full report contains two hypothetical examples of costs and cost break-even points associated with current CAT vendors, which illustrate the costs associated with and production levels necessary to run a cost-effective CAT system.

* * * * *

The report concludes with a glossary of terms and five appendices. Appendix A displays CAT system configurations and provides descriptions of each vendor's system as of January 1981. The abbreviated Appendix A included here contains only names and addresses of CAT vendors. Appendix B lists the state courts where CAT systems are operating and is included here. Appendix C (not included here) contains the production statistics for CAT systems involved in the production of both official court transcripts and free-lance work. Appendix D (not included here) contains guidelines provided by the National Shorthand Reporters Association for screening reporters to use CAT. Appendix E (not included here) contains computations as of January 1981 of net per-page costs for each vendor, using the hypothetical examples outlined in Part IV.

Figure 12: Implementation milestones for a cost-effective CAT system

- A. System planning (months 1-3)
 - 1. Complete review of court and reporter commitment to a CAT system implementation as outlined in Part III of this report.
 - 2. Designate person in court responsible for making decisions regarding CAT procurement and designate CAT system coordinator. Duties of the CAT coordinator have been discussed in Section II above.
 - 3. Screen reporters for adaptability to CAT. (One screening tool provided by the NSRA is contained in Appendix D. This may not be totally appropriate for all vendors' systems; however, it will give a good indication of the reporters who are probably good candidates for CAT.)
- B. Issue RFP (month 2-4)

The system manager and CAT coordinator should jointly develop a request for proposal (RFP) to be sent to all CAT vendors (see listing in Appendix A). The contents of such an RFP have been discussed in Section I: Selecting a CAT Vendor.
- C. Lease/purchase decision; select vendor (months 4-8)
 - 1. Receive bid information from various vendors.
 - 2. Solicit input from your reporters in reviewing RFP information.
 - 3. Determine comparative costs and features for all components and supplies for lease, lease/purchase, or purchase options offered by each vendor.
 - 4. Determine whether you will lease or purchase equipment and software.
 - 5. If funding is to be provided by multiple sources, including reporter guarantees of pages per month or translation fees paid by reporters, etc., enter into formal agreements with reporters and/or other funding sources.
 - 6. Select vendor and complete contract negotiations with vendor.
- D. System implementation (months 8-10)
 - 1. Prepare site (install dedicated electrical circuit, air conditioning, antistatic mats, telephone(s), etc., as required by vendor selected).
 - 2. Receive steno recorder machines and issue to reporters. (month 8)
 - 3. Issue steno recorders to all reporters who will be going on the system. (month 8) As soon as received, steno recorders should be issued to all reporters going on the system regardless of when they will be going on. This will allow reporters to be taking active cases on CAT-compatible cassettes so that when their training cycle begins, they will have ordered transcripts to work on.
 - 4. Install CAT (will be done by hardware vendor in conjunction with CAT vendor).
 - 5. Hire scoper if decision has been made to use one.
 - 6. Establish and implement formal management and monitoring procedures (as discussed in Section II above).
 - 7. Begin system training (provided by CAT vendor, but will require having a scoper, if one will be used, and first set of reporters freed of reporting assignments).
- E. Initiate training/production cycle with first group of reporters. (month 10)

CAT coordinator and system manager review on at least a quarterly basis each reporter's productivity and progress to determine whether the reporter should stay on CAT. (months, 13, 16, 19, 22, etc.)
- F. Initiate training/production cycle with second group of reporters. (month 16)

CAT coordinator and system manager review on at least a quarterly basis each reporter's productivity and progress to determine whether the reporter should stay on CAT. (months, 19, 22, 25, 28, etc.)
- G. Initiate training/production cycle for third group of reporters. (month 22)

CAT coordinator and system manager review on at least a quarterly basis each reporter's productivity and progress to determine whether the reporter should stay on CAT. (months 25, 28, 31, etc.)
- H. On-going system management and monitoring.

Appendices

Appendix A:

CURRENT CAT VENDORS January 15, 1981

Baron Data Systems
W. R. Hicks, Vice-President
1700 Marina Boulevard
P.O. Box 2193
San Leandro, California 94577
415/352-8101

Cimarron Systems
(Purchased by Stenograph Corporation as of 8/1/80)

Reporter's C.A.T. Systems, Inc.
Heinrich O. Comp, Jr., Partner
Suite 601, SCN Bank Building
Greenville, South Carolina 29601
803/271-0811

Stenograph Corporation
Mr. John Staton, Director of Marketing
7300 Niles Center Road
Skokie, Illinois 60077
312/675-1600

Translation Systems, Inc.
Patrick J. O'Neill, Jr.
Vice-President
121 Congressional Lane, Suite 412
Rockville, Maryland 20852
301/468-6505

Xscribe Corporation
Robert Mawhinney, President
443 West C Street
San Diego, California 92101
714/239-1641

Appendix B: CAT Systems in the Courts

Courts with CAT systems in operation more than one year:

1. Philadelphia, Pennsylvania - Court of Common Pleas
370 City Hall
Philadelphia, Pennsylvania 19107

General jurisdiction, civil and criminal
System used: CAT, Inc. (presently being replaced)
Contact: Joe Harrison, Deputy Court Administrator
215/686-2525

2. Dallas, Texas - 203rd Judicial District
Dallas County Courthouse, Room 3141
500 Commerce Street
Dallas, Texas 75202

General jurisdiction, criminal division
System used: Baron
Contact: Mary Ann McNeel, CAT reporter
214/749-8561

3. San Antonio, Texas - 175th District Court
Bexar County Courthouse, 2nd Floor
San Antonio, Texas 78205

General jurisdiction, criminal division
System used: Baron
Contact: Archie Henson, Court Coordinator
512/220-2527

4. Sacramento, California - Court of Appeal, Third Appellate District
Library and Courts Building
Sacramento, California 95814

Intermediate appellate court
System used: Baron
Contact: Wilfried J. Kramer, Clerk
916/445-4677

5. Atlanta, Georgia - Superior Court of Fulton County
707 Fulton County Courthouse
Atlanta, Georgia 30303

General jurisdiction, civil and criminal
System used: Baron
Contact: Jack E. Thompson, Court Administrator
404/572-3116

6. Phoenix, Arizona - Superior Court of Maricopa County
101 West Jefferson
Phoenix, Arizona 95003

General jurisdiction, civil and criminal
System used: Baron
Contact: Gordon Allison, Court Administrator
602/262-3204

Courts with operating CAT systems installed in first half of 1980:

1. Houston, Texas - Harris County Criminal Court
301 San Jacinto Steet, Room 807
Houston, Texas 77002

General jurisdiction, criminal division
System used: Baron
Contact: Charles Cameron, Court Administrator
713/221-6576

2. Baltimore, Maryland - Supreme Bench of Baltimore City (8th Circuit)
535 Civil Courts Building
111 N. Calvert Street
Baltimore, Maryland 21202

General jurisdiction, civil and criminal
System used: Baron
Contact: Doris Gaffney, Chief Court Reporter
301/396-5010

3. Salt Lake City, Utah - Third District Court
Courts Building
240 East Fourth South
Salt Lake City, Utah 84111

General jurisdiction, civil and criminal
System used: Stenograph Steno-CAT
Contact: Tom Betts, Court Administrator
801/535-7681

4. Charleston, West Virginia - Circuit Court (funded by Administrative
Office of the Supreme Court of Appeals)
Kanawha County Courthouse
Charleston, West Virginia 25305

General jurisdiction
System used: Baron
Contact: 1. Duane Price, CAT Reporter 304/348-7167
2. Fletcher Adkins, Deputy Administrative Director
Administrative Office of the Supreme Court of
Appeals 304/348-0145

Note: The Administrative Office of the Supreme Court of Appeal is
also making arrangements for official reporters to use a privately
owned Translation Systems, Inc., system.

5. Tulsa, Oklahoma - District Courts
Tulsa District Courts
Fifth and Denver
Tulsa, Oklahoma 74103

General jurisdiction, criminal
System used: Baron
Contact: Claude Smith, Court Administrator
918/584-0471, ext. 2300

Courts in the process of implementing CAT systems - 1/1/81:

1. Honolulu, Hawaii - First Circuit Court
417 S. King Street
Honolulu, Hawaii 96809

General jurisdiction, civil and criminal
System used: Translation Systems, Inc.
Contact: Anthony C. Ornellas, CAT Reporter
808/548-2802

2. Media, Pennsylvania - Court of Common Pleas
Delaware County Courthouse
Media, Pennsylvania 19063

General jurisdiction, civil and criminal
System used: Translation Systems, Inc.
Contact: Dr. Dennis Metnick
215/891-2011

3. Philadelphia, Pennsylvania - Court of Common Pleas
370 City Hall
Philadelphia, Pennsylvania 19107

General jurisdiction, civil and criminal
System used: Translation Systems, Inc.
Contact: Joe Harrison, Deputy Court Administrator
215/686-2525

4. Reading, Pennsylvania - Court of Common Pleas
Court House
6th and Court Street
Reading, Pennsylvania 19601

General jurisdiction, civil and criminal
System used: Translation Systems, Inc.
Contact: William R. Kase, Chief Court Reporter
215/375-6121, ext. 252

5. Pittsburgh, Pennsylvania - Court of Common Pleas
621 City-County Building
Pittsburgh, Pennsylvania 15219

General jurisdiction, civil and criminal
System used: Translation Systems, Inc.
Contact: Charles H. Starrett, Court Administrator
412/355-5410

6. Detroit, Michigan - Circuit Court (first-year funding provided by
Michigan Court of Appeals)
Wayne County Circuit Court
536 Lafayette Building
Detroit, Michigan 48226

General jurisdiction
System used: Stenograph Steno-CAT
Contact: 1. William C. Oliver, Chief Reporter
313/224-0409
2. Henry Hensen, Assistant Clerk, Court of Appeals
313/256-2780

END