Electronic Discovery: Making Your Opponent's Computer a Vital Part of Your Legal Team

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Electronic Discovery: 
Making Your Opponent's Computer 
a Vital Part of Your Legal Team

Jay E. Grenig†

I. Introduction

Computer technology is revolutionizing the way attorneys gather information, research and write about the law, draft and exchange documents, and communicate with clients and other attorneys.¹ Discovery of information generated by or stored on computer data bases is becoming commonplace.² As a result of these developments, any discovery plan must address the search, location, retrieval, form of production and inspection, preservation, and use at trial of information stored in mainframe or personal computers or information that is accessible online.³

This Article examines the formal and informal discovery of material generated by or stored on computers. First, this Article considers the use

¹ B.A. (1966), Willamette University; J.D. (1971), Hastings College of the Law, University of California. The author is a Professor of Law at Marquette University Law School and is a member of the California and Wisconsin Bars.

² Donald A. Swanson, Support Staff Are Buying and Using Technology: Computers Represent Cultural Change, CORP. LEGAL TIMES, July 1993, at 11 (claiming that more than 70% of corporate counsel use computers).


of electronic technology to conduct discovery. Next, this Article explains how to conduct discovery of electronic material, including planning, searching, retrieving, collecting, and allocating costs. Attention is also given to when the discovery of electronic material can be denied. Finally, this Article explores informal electronic discovery using online electronic services and the Internet.

II. Conducting Formal Discovery by Electronic Means

A. Generally

In addition to discovery of electronic information, discovery requests may be transmitted in computer-accessible form. For example, interrogatories may be served on computer disks and then answered using the same disk, avoiding the need to retype the interrogatories.4

B. Disclosure Under Rule 26(a)

Rule 26(a) of the Federal Rules of Civil Procedure probably does not permit electronic disclosure. Rule 26(a)(4) requires that all disclosures made under Rule 26(a) "be made in writing, signed, served, and promptly filed with the court."5 Electronic service of disclosure on an opposing party can be objected to on the ground that it violates the signature requirement of Rule 26(a)(4).6 The consent of both the opponent and the court should be sought before using electronic means to serve or file a required disclosure.7

7 Id.
C. Electronic Depositions

Rule 30(b)(7) of the Federal Rules of Civil Procedure permits parties to agree to conduct depositions by "telephone or other remote electronic means." If they cannot agree, a party may move for a court order. Since electronic communications networks can combine voice, video, and written signals, these networks allow a deponent to see and comment on written exhibits, as well as respond to oral questions.

D. Interrogatories

The service of interrogatories by electronic means may be proper, particularly where a court allows electronic service of various papers. Responses to interrogatories, however, should not be transmitted by electronic means because of the signing and oath requirements of Rule 33(b). However, in the foreseeable future, courts may be more willing to permit the electronic filing of answers in light of developments permitting digital signatures.

Rule 33(d) of the Federal Rules of Civil Procedure permits parties to answer interrogatories by making business records, including "compilations," available for inspection and copying, where "the burden of deriving or ascertaining the answer is substantially the same for the party serving the interrogatory as for the party served." In applying Rule 33(d) to stored computer records, a court will need to consider:

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8 FED. R. CIV. P. 30(b)(7).
9 Id.
10 BENKLER, supra note 6, § 27.4(5)(b).
11 Id. § 27.4(5)(c).
12 Id.
13 For example, see the digital signature guidelines developed by the Information Security Committee of the Science and Technology Section of the American Bar Association. See also Victoria Slind-Flor, Legal Locksmiths: Moving into Cyberspace as Notaries, NAT'L L.J., Dec. 18, 1995, A1.
14 FED. R. CIV. P. 33(d).
1. Whether production and inspection should be in computer-readable form (such as by translation onto CD-ROM disks) or printouts.\textsuperscript{15} 

2. What information the producing party may be required to provide, such as manuals, to facilitate the requesting party’s access to and inspection of the producing party’s data.\textsuperscript{16} 

3. Whether to require the parties to agree on a standard format, such as a particular computer program or language, for production of computerized data. 

4. How to minimize and allocate the costs of production (such as the cost of computer runs or of special programming to facilitate production).\textsuperscript{17} 

E. Production of Documents 

There is no general filing requirement for document requests.\textsuperscript{18} Service of document requests is a matter of notice and communication between the parties.\textsuperscript{19} There is probably no reason to limit the electronic response to those requests, particularly among parties that have the capacity to, and commonly communicate electronically.\textsuperscript{20} However, attorneys attempting to serve responses to document requests electronically should usually obtain the consent of opposing counsel.

\textsuperscript{15} See Crown Life Ins. Co. v. Craig, 995 F.2d 1376, 1382 at n.1 (7th Cir. 1993) (holding respondent who fails to produce electronic data when asked for all “written documents” may be sanctioned for failing to produce materials in computerized form, even if it produces data in hard copy form); see, e.g., National Union Elec. Corp. v. Matsushita Elec. Indus., 494 F. Supp. 1257, 1262 (E.D. Pa. 1980) (holding extensive data must be provided in computer-readable format). 

\textsuperscript{16} See Fauteck v. Montgomery Ward & Co., 96 F.R.D. 141, 144-45 (N.D. Ill. 1982) (requiring defendant to provide information necessary to make computer material accessible to plaintiff for use on his computer). 

\textsuperscript{17} See Bills v. Kennecott Corp., 108 F.R.D. 459, 464 (D. Utah 1985) (denying motion to require plaintiffs to pay cost of producing computer printout requested by defendants, considering that amount of money involved was not excessive or inordinate). 

\textsuperscript{18} BENKLER, supra note 6, § 27.4(4)(b). 

\textsuperscript{19} Id. 

\textsuperscript{20} Id.
III. Conducting Discovery of Electronically Stored or Generated Material

A. Generally

Computers have become so commonplace that many court battles now involve discovery of computer-stored information. Computerized data includes not only conventional information but also "operating systems (programs that control a computer's basic functions), applications (programs used directly by the operator, such as word processing or spreadsheet programs), computer-generated models, and other sets of instructions residing in computer memory." Generally, the discovery rules that apply to paper documents also apply to computer-generated or stored materials. One judge has commented on discovery in the computer age as follows:

It may well be that Judge Charles E. Clark and the framers of the Federal Rules of Civil Procedure could not foresee the computer age. However, we know we now live in an era when much of the data which our society desires to retain is stored in computer discs. This process will escalate in years to come; we suspect that by the year 2000 virtually all data will be stored in some form of computer memory. To interpret the Federal Rules which, after all, are to be construed to "secure the just, speedy, and inexpensive determination of every action,"


in a manner which would preclude the production of material such as is requested here, would eventually defeat their purpose.24

Rules 33 and 34 of the Federal Rules of Civil Procedure clearly allow discovery of information, even if the information is in a computer. However, this does not mean that information in a computer is, for that reason alone, necessarily discoverable. Discovery of computerized information will be denied if the information is not otherwise subject to discovery.25

B. Planning Electronic Discovery

Planning for electronic discovery should begin early in the litigation. As soon as litigation threatens, the opposing party should be put on notice to preserve two complete and verified copies of all possibly related data on backup tape or other suitable media. Because of the potential for erasing documents, parties should consider seeking a particularized preservation order ensuring that all sources, including primary, secondary or off-site computer files, be preserved pending discovery.26 The order should include a specific reference to all copies and versions of data-base and spreadsheet-generated files, word processing files, e-mail, diaries, schedule organizers, financial and commercial data compilations, and similar sources of information.27

Before entering the opposing party’s premises to conduct electronic discovery, the identity of the management information systems director or person maintaining the computer system should be established through

24 National Union Elec. Corp. v. Matsushita Elec. Indus., 494 F. Supp. 1257, 1262-63 (E.D. Pa. 1980) (granting defendants’ request to order plaintiff to have its computer experts create computer readable tape containing certain data previously supplied by plaintiff to defendants in printed form in answers to interrogatories) (citing FED. R. CIV. P. 1).


26 BENKLER, supra note 6, § 27.6(1)(f).

27 Id.
interrogatories or depositions. Because computer-stored data will not necessarily be found in an appropriately labeled file, broad data base searches may be necessary. This may expose confidential information to disclosure. Accordingly, appropriate safeguards may have to be established.

C. Using a Neutral Computer Expert

One authority has recommended that a neutral computer expert be used to perform the on-premises electronic media discovery. If a neutral expert is used to assist with discovery, the expert should sign a nondisclosure agreement.

The retained computer expert should not physically touch the opposing party’s computer system. The expert should direct the party’s own employees to search for data, restore and search older file versions, observe any displayed results, and obtain, protect, and preserve authenticated copies of computer format data files and, where appropriate, printouts of any results. This method can reduce exposure to claims of evidence spoliation or of tampering and damaging systems or data.

D. Searching and Retrieving Electronic Information

Any discovery plan should address the search, location, and retrieval of information stored in computers. The plan should also include the form

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28 Kashi, supra note 3, at 76.

29 See Timken Co. v. United States, 659 F. Supp. 239, 243 (1987) (involving system for redacting confidential information); see also Adams v. Dan River Mills, Inc., 54 F.R.D. 220, 222 (W.D. Va. 1972) (finding because of accuracy and inexpensiveness of producing requested documents, defendant would be required to produce them, but if defendant desired, court would entertain motion to put them under protective order).

30 Kashi, supra note 3, at 77.

31 Id. at 78.
of production and inspection, the manner of preservation, and the use of such information at trial.\textsuperscript{32}

Some computerized information may have been collected in anticipation of or for use in the litigation and may be entitled to protection as work product.\textsuperscript{33} Other computerized information may be protected under the attorney-client privilege or protected as trade secrets. A computer program may be protected on the grounds that it is a proprietary and personal work product of the computer programmer.\textsuperscript{34}

Discovery may be denied where the requesting party is seeking access to the computer program or other materials in order to avoid hiring its own expert.\textsuperscript{35} Under some circumstances, if computer materials are discoverable the court may require a party to compensate its opponent for its expenses.\textsuperscript{36}

Parties should attempt to “work out arrangements for the efficient and economical exchange of voluminous data. Where feasible, data that exist in computerized form should be produced in computer-readable format.\textsuperscript{37} Where the material is in a format not readable by the party seeking discovery, the court may order the responding party to assist the discovering party in interpreting the material.\textsuperscript{38}

\textsuperscript{32} \textit{MANUAL FOR COMPLEX LITIGATION} § 21.446 (3d ed. 1995).

\textsuperscript{33} See \textit{generally} \textit{WRIGHT ET AL., supra} note 23, § 2218 (citing United States v. American Tel. & Tel. Co., 642 F.2d 1285 (D.C. Cir. 1980) (computer program developed to analyze documents protected as work product)).

\textsuperscript{34} See, e.g., \textit{Perma Res. & Dev. v. Singer Co.}, 542 F.2d 111, 115 (2d Cir. 1976).

\textsuperscript{35} See \textit{Pearl Brewing Co. v. Jos. Schlitz Brewing Co.}, 415 F. Supp. 1122, 1137-38 (S.D. Tex. 1976) (holding when a party is seeking access to computer program to avoid expense of compensating its own expert witnesses or to develop its own case entirely out of the mouth of its adversary’s expert witness, program will be nondiscoverable).

\textsuperscript{36} See \textit{FED. R. CIV. P. 26(b)(4)(C)} (stating that a court may require a party seeking discovery to pay an expert a reasonable fee).

\textsuperscript{37} \textit{MANUAL FOR COMPLEX LITIGATION} §§ 33.12 & 33.53 (3d ed. 1995). \textit{See In re Air Crash Disaster at Detroit Metro. Airport, 130 F.R.D. 634, 636 (E.D. Mich. 1989)} (requiring aircraft manufacturer to produce flight director’s simulation program and data on computer-readable nine-track magnetic tape).

\textsuperscript{38} Greyhound Computer Corp. v. IBM, 3 Comp. L. Serv. Rep. 138 (D. Minn. 1971); \textit{see also} \textit{Timken Co. v. United States}, 659 F. Supp. 239, 243 (Ct. Int’l Trade 1987) (stating discovering party paid data service company to determine how computer program functioned).
E. Collecting Computerized Data

Computerized data may be collected in a common document depository. In *Bell v. Automobile Club of Michigan*, the court ordered the parties to set up a computer data bank containing certain employment records of the defendant. The court stated:

The use of computerized data requires the co-operation of all parties. The parties are directed to meet: (1) to resolve technological problems, (2) to determine what information, if any, contained on the tapes and in the cardex file will not be required by plaintiffs, (3) to establish what protective conditions, if any, are to be attached to the disclosure and use of this information, and (4) to determine appropriate costs.

Where the court orders the establishment of a computer data bank, the parties are under a continuing duty to cooperate. A court may consider a party's noncooperation in setting up a computer data bank when determining the allocation of costs and the imposition of sanctions.

F. Allocating Costs of Producing Electronic Data

Frequently, the cost of production of computerized information may be an issue. This may be particularly true where production is of e-mail

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41 *Bell*, 80 F.R.D. at 233.
42 *Id.*
43 *Id.*
44 *Manual for Complex Litigation* § 21.446 (3d ed. 1995); see, e.g., *Timken Co.*, 659 F. Supp. at 243 (requiring discovering party pay data service company to copy tapes and perform necessary redactions). *But see* National Union Elec. Corp. v. Matsushita Elec. Indus., 494 F. Supp. 1257, 1262 (E.D. Pa. 1980) (finding because discovering party expressed willingness to pay costs of whatever operations were necessary to prepare a computer-readable tape, problem of allocating burden of discovery expense was non-issue).
or voice-mail messages erased from a hard disk but capable of retrieval using sophisticated means.\textsuperscript{45}

The expense of making the data available must ordinarily be born by the responding party.\textsuperscript{46} The cost can be shifted to the discovering party only on a showing under Rule 26(c) that justice so requires it in order to protect the responding party from "undue burden or expense."\textsuperscript{47} In deciding whether to shift the costs of computer discovery, a court should consider:

1. Whether the amount of money involved is excessive or inordinate.
2. Whether the relative expense and burden in obtaining the data would be substantially greater to the requesting party as compared to the responding party.
3. Whether the amount of money required to obtain the data as set forth by the responding party would be a substantial burden on the discovering party.
4. Whether the responding party is benefited in its case to some degree by producing the data in question.\textsuperscript{48}

In appropriate situations, courts have required discovering parties to pay for preparing computer print-outs or computer readable information. For example, in Adams v. Dan River Mills, Inc.,\textsuperscript{49} the court ordered, without explanation, that the discovering party pay the responding party’s


\textsuperscript{46}FED. R. CIV. P. 26(c).


\textsuperscript{48}Bills, 108 F.R.D. at 464.

\textsuperscript{49}54 F.R.D. 220 (W.D. Va. 1972).
cost of preparing the computerized master payroll file and computer printouts of W-2 forms. In *Pearl Brewing Co. v. Jos. Schlitz Brewing Co.*, the court ordered that the defendant was entitled to receive or inspect and copy the entire system documentation for two econometric models at the defendant's expense.

Despite these decisions, there appears to be no compelling reason for treating the cost of producing computerized information differently than the cost of producing any other information. The production cost shifts to the discovering party only where the cost is an "undue burden" on the responding party.

In *Bills v. Kennecott Corp.*, the court addressed the question of who pays the cost of producing computerized information. The issue in *Bills* was whether the discovering party or the requesting party should be required to pay the $5,000 cost of providing a computer tape or printout of requested computer data. The court stated:

Computers have become so commonplace that most court battles now involve discovery of some type of computer-stored information. Although parties in the past have been able sometimes to shift the majority of the costs of document production to the requesting party merely by making records available for inspection, that cost-shifting tactic is less available and less necessary when the information is stored in computers. Parties are hesitant to open up their computer banks for inspection pursuant to discovery requests, and such a process currently is impracticable because of the myriad of types of computers and the lack of expertise on the part of parties and their lawyers in computer technology and data processing. As a result, the requested party most

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50 *Dan River Mills, Inc.*, 54 F.R.D. at 221; see also *Penk v. Oregon State Bd. of Higher Educ.*, 816 F.2d 458, 467-68 (9th Cir. 1987) (finding district court could properly require plaintiff to share cost of corrections made by defendant employer to its inaccurate computer data base).


52 *Pearl Brewing Co.*, 415 F. Supp. at 1134.


54 *FED. R. CIV. P. 26(c).* *Cf. Wright et al., supra* note 23, §§ 2218, 2036 & 2038.


56 *Kennecott Corp.*, 108 F.R.D. at 459.
often has no reasonable choice other than to produce the documentation in a comprehensible form by use of its own computer technicians. Improvements in technology which advantage almost everyone have become commonplace and widespread, and because we live in a society which emphasizes both computer technology and litigation, the mix of computers and lawsuits is ever increasing. Accordingly, parties requested to produce computer stored data will have to shoulder the burden of showing "undue" expense or burden before courts should shift the costs to the requesting party.\textsuperscript{57}

The court in \textit{Bills} found that the $5,000 involved was not excessive or inordinate, that the relative expense and burden in obtaining the data would have been substantially greater for the discovering party as compared with the responding party, that the amount of money required to obtain the data as set forth by the responding party would have been a substantial burden to the discovering party, and that the responding party benefitted to some degree by producing the data.\textsuperscript{58} Accordingly, the court denied the responding party's motion for an order requiring the discovering party to pay the cost it incurred in producing the computer printout.\textsuperscript{59}

\textbf{G. Disclosing Electronic Information}

The disclosure provisions of Rule 26(a) of the Federal Rules of Civil Procedure apply to computer-generated reports.\textsuperscript{60} When conducting the initial disclosures under Rule 26(a)(1), opposing counsel should be requested to ensure that the initial disclosure documents specify all pertinent electronic file names and locations.\textsuperscript{61} Alternatively, the parties can agree

\textsuperscript{57} \textit{Id.} at 462.
\textsuperscript{58} \textit{Id.} at 464.
\textsuperscript{59} \textit{Id. But see In re Air Crash Disaster at Detroit Metro. Airport on Aug. 16, 1987, 130 F.R.D. 634, 636 (E.D. Mich. 1989)} (holding that, because requested discovery material did not currently exist, the discovering party was directed to pay all reasonable and necessary costs that may be associated with manufacture of computer readable tape).
\textsuperscript{60} See Novick & Gamble, \textit{supra} note 2, at 18 (stating Federal Rule of Civil Procedure 26 requires lawyer to identify and disclose every computer-generated report client routinely produces if it contains relevant information).
\textsuperscript{61} Kashi, \textit{supra} note 3, at 76-77.
H. Producing Electronic “Documents”

Rule 34 of the Federal Rules of Civil Procedure permits the production, inspection and copying of computerized data. Rule 34(a) defines documents as including “data compilations from which information can be obtained, translated, if necessary, by the respondent through detection devices into reasonably usable form.” The Advisory Committee’s Note to the 1970 amendment to Rule 34 explains this language as follows:

The inclusive description of “documents” is revised to accord with changing technology. It makes clear that Rule 34 applies to electronics data compilations from which information can be obtained only with the use of detection devices, and that when the data can as a practical matter be made usable by the discovering party only through respondent’s devices, respondent may be required to use his devices to translate the data into usable form. In many instances, this means that respondent will have to supply a print-out of computer data. The burden thus placed on respondent will vary from case to case, and the courts have ample power under Rule 26(e) to protect respondent against undue burden or expense, either by restricting discovery or requiring that the discovering party pay costs. Similarly, if the discovering party needs to check the electronic source itself, the court may protect respondent with respect to preservation of his records, confidentiality of nondiscoverable matters, and costs.

It is important to understand that many copies of a computerized document may exist and these documents can exist in numerous locations.

62 Id. at 78.
63 Id. at 79; FED. R. CIV. P. 34(a)(1).
64 FED. R. CIV. P. 34(a).
65 FED. R. CIV. P. 34 advisory committee’s note.
Because a single document may exist in different versions, these different versions may be revealing of a thought process.66

Rule 34(a) of the Federal Rules of Civil Procedure requires that information be produced by the responding party in a "reasonably usable form."67 Rule 34(a) allows a party to require its opponent to "permit the party making the request . . . to inspect and copy, any designated documents . . . (including . . . other data compilations . . .)."68 This means that the requesting party is entitled to receive the content of a document as well a copy of the document itself.69 Consequently, where the document exists in computerized form as well as in another form, the requesting party is entitled to a copy of the document in the computerized form.70

The time and expense of discovery may be substantially reduced if pertinent information existing in computerized form is produced in computer-readable format.71 In such cases, a party should be required to provide information in a computer-readable form, so that the data may be stored by the discovering parties for later analysis on their own computers without the time, expense, and potential for errors that would result if data from a print-out were entered manually. Production of information in computer-readable form will normally reduce disputes over the accuracy of compilations made from such data and enable experts for both sides to conduct studies using a common set of data.72

In Adams v. Dan River Mills, Inc., the plaintiff sought the defendant’s computerized master payroll file and all computer printouts for W-2 forms of the defendant’s employees.73 The defendant objected on the ground that the computer printouts containing that information had already been provided.74 The court held that, because of the accuracy and low cost of

66 BENKLER, supra note 6, § 27.6(1)(a).
67 FED. R. CIV. P. 34(a).
68 Id.
69 BENKLER, supra note 6, § 27.6(1)(c).
70 MANUAL FOR COMPLEX LITIGATION § 33.12 (3d ed. 1995).
71 Id. § 33.53.
72 Id.
74 Adams, 54 F.R.D. at 221.
producing the requested documents, it could see no reason why the defendant should not be required to produce the computer tapes.\textsuperscript{75}

On the other hand, in \textit{Williams v. Owens-Illinois, Inc.}, the Ninth Circuit refused to compel production of computer tapes where the plaintiff had already received "wage cards" containing the identical information.\textsuperscript{76} The court explained:

\begin{quote}
All information contained on the computer tapes was included in the wage cards which appellants discovered . . . . Appellants were therefore not deprived of any data. While using the cards may be more time consuming, difficult and expensive, these reasons, of themselves, do not show that the trial judge abused his discretion in denying appellants the tapes.\textsuperscript{77}
\end{quote}

A party seeking discovery of documents should seek access to the responding party's computer. Direct access by an expert could help the requesting party uncover deleted files, file and directory information about the dates of revisions, information regarding who accessed the files and when, and similar information not generally available through discovery of the documents alone.\textsuperscript{78}

A party faced with a request for access to its computer system, in addition to or instead of opposing access altogether must consider what proprietary and other confidential information may be compromised by such a search. In appropriate cases, a protective order should be sought.\textsuperscript{79}

\textsuperscript{75} \textit{Id.} at 222; \textit{see also} United States v. Davey, 543 F.2d 996, 998 (2d Cir. 1976) (requiring taxpayer to produce certain computer tapes containing transactions and records relating to general expenses and losses, although taxpayer had already provided printout of information); Timken Co. v. United States, 659 F. Supp. 239, 241 (Ct. Int'l Trade 1987) (compelling discovery of computer tapes that contained sales and cost information previously provided to plaintiff in approximately 15,000 pages of computer printout, concluding that time and expense required to keypunch cost and sales data would be prohibitive).

\textsuperscript{76} 665 F.2d 918, 933 (9th Cir. 1982).

\textsuperscript{77} \textit{Williams}, 665 F.2d at 933.

\textsuperscript{78} \textit{BENKLER}, \textit{supra} note 6, § 27.6(1)(d).

\textsuperscript{79} \textit{WRIGHT ET AL.}, \textit{supra} note 23, § 2218; \textit{BENKLER}, \textit{supra} note 6, § 27.6(1)(d).
I. Answering Interrogatories

Courts have also ruled on the propriety of interrogatories seeking information concerning a computer system or the files stored in computers. In United States v. Fensterwald, the court ordered the Internal Revenue Service to answer a taxpayer's interrogatory seeking to learn how the taxpayer was selected for an audit.

In Hoffman v. United Telecommunications, Inc., the court refused to compel a party to answer interrogatories about that party's computerized trial preparation system. In Hoffman, the plaintiff served interrogatories requesting detailed information about a computer file containing the personnel records of the defendant-employer that had been prepared for litigation. Holding that the information in the data base constituted work product, the court pointed out that the interrogatories requested more than simply whether the computer file existed.

The court found that the interrogatories, in effect, asked the defendants to explain their discovery plan. However, the court cautioned that if the employer decided to use information derived from the computer file for

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80 See, e.g., Donaldson v. Pillsbury Co., 554 F.2d 825, 832-33 (8th Cir. 1977) (requiring defendant to answer interrogatories requesting detailed information about files maintained in defendant's electronic data processing system to enable attorneys to file requests for production of magnetic tapes containing data stored in certain of defendant's files so that plaintiff's experts could perform their own computer analysis of data); Laufman v. Oakley Bldg. & Loan Co., 72 F.R.D. 116, 121-22 (S.D. Ohio 1976) (requiring defendants to answer interrogatory requesting type of data which was fed into computers and electronic data processing equipment used by defendants).

81 553 F.2d 231 (D.C. Cir. 1977). The taxpayer served as chief counsel to a committee which investigated illegal activities of the IRS. The court commented that the normal taxpayer has no right to such discovery. Fensterwald, 553 F.2d at 232.

82 117 F.R.D. 436, 439 (D. Kan. 1987); see MANUAL FOR COMPLEX LITIGATION § 21.446, at 80 n.188 (3d ed. 1995) (suggesting records computerized for "litigation support" purposes, not considered by an expert or intended for use at trial, may be protected trial preparation materials under Federal Rule of Civil Procedure 26(b)(3) to the extent they reveal counsel's decisions as to which records to computerize and how to organize them).

83 Hoffman, 117 F.R.D. at 437.

84 Id. at 439.

85 Id.
its expert’s reports or any other evidence in trial, the plaintiff was to be provided with information about the computer file. 86

**J. Computer-Generated Exhibits**

Computers can be used to generate exhibits, such as charts, graphs, diagrams, and animations. 87 The computer presents a real danger of being the vehicle used to introduce erroneous, misleading, or unreliable evidence. The possibility of an undetected error in computer-generated evidence may be the result of several factors:

1. The underlying data may be hearsay.
2. Errors may be introduced in any one of several stages of processing.
3. The computer may be erroneously programmed.
4. The computer may be programmed to permit an error to go undetected.
5. The computer may be programmed to introduce error into the data.
6. The computer could display the data inaccurately or in a biased manner. 88

Because of the complexities of examining computer-generated evidence, courts and practitioners should exercise more care with computer-generated evidence than with evidence generated by traditional means. 89 Where a computer is programmed or used to produce information specifically for litigation, a court should not permit a witness to state the results of a computer’s operations without making the program available for cross-examination. 90 The availability of this information should be made known

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86 Id.
89 Roberts, supra note 88, at 256.
90 Perma Res. & Dev. Co., 542 F.2d at 125; see also United States v. Liebert, 519 F.2d 542, 547 (3d Cir. 1975) (holding party seeking to impeach reliability of computer evidence should have sufficient opportunity to ascertain by discovery whether both the
sufficiently in advance of trial so that the adverse party will have an opportunity to examine and test the program prior to trial.\textsuperscript{91}

The Second Circuit has explained the importance of permitting discovery of this computer information:

It is a mistake to liken the program of a computer to human calculation, because the program directs the performance of tasks that humans would not attempt, in a manner that they would not elect. Jacobs, Commission's Report on Computer Programs, 49 J. Pat. Off. Soc'y 372, 374 (1964). An error in programming can be repeated time after time, and simulation with an incorrect program is "worse than worthless." Favret, Introduction to Digital Computer Applications. For this reason, programming requires great accuracy, more than that needed in other types of engineering. Ershov, Aesthetics and the Human Factor in Programming, 13 Jurimetrics J. 142 (1973).\textsuperscript{92}

\section*{K. E-Mail Messages}

The increased use of e-mail may generate a fertile source of potentially discoverable information, including office memoranda, formal business communications, manuals, letters, telephone calls, and conferences.\textsuperscript{93} E-mail messages may be a "particularly good source of discovery material because electronic messages tend to be written in an informal manner."\textsuperscript{94}
Consequently, employees and employers write things in an e-mail message that they usually would not write in a written memorandum.95

E-mail messages are considered to be records under the Federal Records Act (FRA).96 As such, the government is required to preserve e-mail messages in accordance with the FRA.97 It may be possible to obtain these records through informal discovery under the Freedom of Information Act (FIA).98 The FIA authorizes requests by members of the public for tangible information in the possession of the federal government.99 Because the FIA is intended to be a vehicle for public access to information about governmental activities, it does not require that any showing of need be made to justify disclosure.100 On the other hand, in order to obtain discovery, a litigant must show that the material sought falls within the scope of discovery.101 The government may withhold items requested under the FIA on the ground of various exemptions, some of which track privileges applicable to discovery.102

Litigants or potential litigants may resort to the Freedom of Information Act as a supplement or substitute for discovery. Where formal discovery requests and the FIA overlap, it is generally appropriate to keep the issues separate.103 A litigation-related purpose generally should not be a bar to

95 Id. (indicating e-mail messages found in computer system suggested that employees were concealing flaws in product); Marianne Lavalle, Digital Information Boom Worries Corporate Counsel, NAT'L L.J. May 30, 1994, at B1 (allowing evidence in sexual harassment suit which revealed an e-mail message contradicted employer's assertion that female employee was terminated for economic reasons).


97 Armstrong v. Executive Office of the President, 1 F.3d 1274, 1283-84 (D.C. Cir. 1993).


99 Id.


101 FED. R. CIV. P. 26(b)(1).


a FIA request. Furthermore, the possibility that a document would be exempt from disclosure under the FIA does not require that discovery of the document be denied.

It is unclear whether confidential attorney-client communications by e-mail are protected by the attorney-client privilege. The few state ethics boards that have issued opinions are in disagreement. However, one commentator has pointed out that e-mails which are sent wholly within America Online's system, are distinguishable from e-mails sent through the nonproprietary Internet. In *United States v. Maxwell*, the Air Force Court of Criminal Appeals found a reasonable expectation of privacy in e-mail for Fourth Amendment search and seizure purposes.

Problems relating to e-mail and other electronic messages can be minimized by advising clients to develop and to enforce policies regarding the creation of e-mail and the retention, organization, and destruction of archival e-mail. Because e-mail messages are often permanently recorded, attorneys should warn their clients that e-mail messages should be created with the same care as letters or internal memoranda.

E-mail retention and deletion policies should include archival e-mail messages. The policies should provide for deletion in the shortest period of time consistent with business needs. Retained e-mail messages should

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105 Baldrige v. Shapiro, 455 U.S. 345, 360 n.15, 102 S. Ct. 1103, 1112 n.15, 71 L. Ed. 2d 199, 212 n.15 (1982). See, e.g, Burka v. United States Dep't of Health & Human Servs., 87 F.3d 508, 510 (D.C. Cir. 1996) (stating claim that release of requested research on smoking behavior would harm researcher's publications prospects provided no basis for withholding it since that would not be a basis for denying discovery in a civil action).


108 Id.


111 Id.

112 Id.
be organized with uniform, descriptive titles in order to avoid the cost and burden of reviewing all retained e-mails for relevance to a discovery request.\textsuperscript{113} However, once litigation has commenced, the client should be advised to consult with its attorney regarding what may be properly destroyed.\textsuperscript{114}

In order to assure that the opposing party produces relevant e-mail (as well as voicemail) during discovery, the discovering party should do the following:

1. Require the opposing party to preserve backup tapes or other archival data.
2. Consider having the opposing party preserve its archives, either to preserve important evidence or to forestall charges that the opposing party has permitted the destruction of relevant evidence.
3. Specifically request e-mail and voicemail.
4. Include magnetically recorded documents in the requests for all electronically created or recorded documents, not just e-mail and voicemail.
5. Request archival copies of magnetically or optically recorded documents.
6. Request documents that have been logically deleted but not physically erased.
7. Request the actual media (whether magnetic, optical, or other) that have been used to record or store documents, including backup or archive media.\textsuperscript{115}

E-mail messages and computer files can be retrieved with relative ease, even when the message or file has been deleted or erased.\textsuperscript{116} In addition, e-mail messages may be stored on an individual’s own computer hard drive or saved on backup tapes.

\textsuperscript{113} Id.
\textsuperscript{114} Id.
\textsuperscript{115} Staib, supra note 106, at 4.
\textsuperscript{116} See BENKLER, supra note 6, § 27.6(1)(b); McNeil & Kort, supra note 45, at 18; Meyer, supra note 45, at 89; Reuben, supra note 45, at 115.
When material is deleted from a computer, the computer merely "marks" the document so that it can be overwritten with new information in the future. Until the entire document is overwritten, the computer retains remnants of the supposedly deleted document. A knowledgeable computer operator can easily retrieve the deleted information.117

E-mail messages may be stored at a network service provider's remote storage site.118 A party that seeks to discover remote location e-mail messages can use a Rule 34 request for production since the responding party is considered in custody of the computer records on the network provider's system for disclosure purposes if the party can access and retrieve the stored messages.119

Where the responding party can no longer access the records through normal use or systems maintenance, it may be necessary to seek disclosure from a non-party network provider.120 Disclosure from a non-party network provider requires a subpoena and may be limited by the Electronic Communications Privacy Act (ECPA).121

There may be problems in discovering e-mail messages sent and received by non-party employees working for a company that is a party.122 Personal e-mail of non-party employees may be protected by the ECPA.123 Where an employee wishes to protect private e-mail communications, the employee should seek a protective order under Rule 26(c).

Companies frequently contract for e-mail services from network providers.124 The network provider installs a local area network linked to the

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117 McNeil & Kort, supra note 45, at 18.
118 See 18 U.S.C. §§ 2510-2710 (1986); see also Benkler, supra note 6, § 27.6(2)(b).
119 Benkler, supra note 6, § 27.6(2)(b); see United States v. Bowers, 920 F.2d 220, 223 (4th Cir. 1990) (holding computers records to be in custody of any user who had proper access to records for purpose of hearsay rules).
120 Benkler, supra note 6, § 27.6(2)(b).
121 18 U.S.C. §§ 3117-3167 (1986); see Benkler, supra note 6, § 27.6(2)(b).
122 Benkler, supra note 6, § 27.6(2)(c).
123 See 18 U.S.C. §§ 2510-2710 (1986); Benkler, supra note 6, § 20.3 (discussing the Electronic Communications Privacy Act).
124 Benkler, supra note 6, § 27.6(3)(a).
provider's public network for external communications. In some situations, the provider may provide both external and internal connections, routing internal messages through the provider's remote storage facilities.

E-mail providers generally have backup copies of e-mail messages transmitted over their network. Accordingly, e-mail providers may be an excellent source for discovery of e-mail communications involving an opposing party. Discovery of messages stored on the non-party provider must be accomplished by subpoena instead of by notice. The ECPA does not prohibit discovery of electronic communications pursuant to a subpoena; it does create a hierarchy of protection for various types of digital records held by a network service provider.

One expert on electronic communications wrote about the impact of the ECPA on subpoenaed electronic communications as follows:

The ECPA does not pose a formal bar to disclosure of any records held by the e-mail provider, not even the content of messages in transit, if these are subject to a subpoena and the court does not issue a protective order. In fashioning protective orders, courts would nevertheless do well to consider whether production of content can be had from a party, leaving it to the e-mail provider to disclose transmission information without revealing content. Furthermore, the more storage is a direct part of communication, the less a court should be willing to disrupt the normal course of transmission management of an e-mail provider and to compromise the sense of security and confidentiality of electronic communications. If a party is seeking to discover directly the contents of messages that the e-mail provider stores for a period of three to five days, a court might consider whether the damage to the particular case from denying access to the requesting party justifies the social costs to the security of e-mail implied by a broad public recognition that e-mail messages always leave a paper trail that users cannot control.
L. Denying Discovery

Attorneys frequently use computers for document preparation, document databases, litigation support systems, and e-mail. Additionally, many corporate legal departments communicate with other departments or subsidiaries by computer. Over thirty percent of in-house counsel communicate with outside counsel using computers. Computers can be used to develop litigation data bases, including document management, indexing, and abstracting; generate exhibits such as charts, graphs, diagrams, and animations; plan cases; monitor discovery; track pleadings and correspondence; profile judges; research the law; research facts; and track cases.

The claim usually asserted to protect computer-based litigation support systems from discovery is that such systems are protected work product. The work product privilege protects materials prepared by an attorney in anticipation of litigation. Where the litigation support system reflects the attorney's mental impression or thought process, work-product protection precludes discovery of the system.

A computer-based litigation support system may be developed in three ways: (1) summarizing or indexing documents, (2) scanning full-text documents, or (3) combining the two types. The more the attorney is immediately involved in the litigation support system, the more protection it will be afforded. The summary or index formats are the least likely to be discoverable, "because the attorney has obviously read, summarized, and analyzed the importance of the documents."

131 Grady, supra note 23, at 526.
132 Id. at 526-27 (citing General Counsel Survey: In-House Counsel Still Wary of Information Superhighway, CORP. LEGAL TIMES, July 1995, at 35).
133 Id.
135 See Barrish, supra note 87, at 694.
136 Mulroy & Wernikoff, supra note 23, at 126.
137 See generally Hoffmeister, supra note 25, at 60.
139 Mulroy & Wernikoff, supra note 23, at 126.
In *In re IBM Peripherals Litigation*, the court refused to compel the defendant to disclose its computerized trial support system.\(^{140}\) The defendant developed the system to defend against an anti-trust action.\(^{141}\) It included defendant’s summaries of certain documents belonging to the defendant.\(^{142}\) The court found that the defendant had prepared its system solely for litigation and the system reflected the mental impressions of defense counsel.\(^{143}\) The court also found that all of the documents in the system were available in paper form.\(^{144}\) The court concluded that allowing the plaintiffs to use the defendant’s system would impinge on defense counsel’s ability to organize the material in the counsel’s own manner and declined to compel disclosure of information “from or about” the trial support system.\(^{145}\)

In *Shipes v. BIC Corp.*, the court held that a data base constructed by the defendant’s in-house counsel was not available through discovery by the plaintiff.\(^{146}\) Pointing out that the defendant had constructed its data base to manage claims, the court stated:

The computer data base undoubtedly contains a substantial amount of work product which would be impossible to separate from non-work product. In fact, the entire system arguably constitutes work product as it was created in anticipation of litigation. The data base should not be any more vulnerable to discovery than were it maintained by outside counsel.\(^{147}\)

The court held that the database was not discoverable, but that the plaintiff was not precluded from discovering the information from an alternative source.\(^{148}\)

\(^{140}\) 5 Computer Law Serv. 878 (N.D. Cal. 1975).

\(^{141}\) *In re IBM Peripherals*, 5 Computer Law Serv. 878.

\(^{142}\) *Id.*

\(^{143}\) *Id.* at 879.

\(^{144}\) *Id.*

\(^{145}\) *Id.* at 880.


\(^{147}\) *Shipes*, 154 F.R.D. at 309.

\(^{148}\) *Id.*
Attorneys merely scanning the full text of documents into a computer system may be afforded less protection from discovery because the only attorney mental impressions involved are embodied in the attorney’s determination of which documents should be used and in what order they should be kept. Attorneys “should involve themselves in the preparation and construction of their computer systems as much as possible to ensure that the work-product protections hold.”

If an expert bases his or her report or trial testimony on a computer database, the underlying computer data upon which the expert rests his or her testimony may be discoverable. Attorneys who allow their testifying experts access to their computer litigation system may waive the work product privilege. Computer simulations used to argue a case may be discoverable if they are the basis of an expert’s opinion.

In Fauteck v. Montgomery Ward & Co., the attorneys for the defendant developed a computerized litigation support system that included records from personnel files. The court held that the support system was not protected by the work product doctrine, because the database served as the foundation for the trial testimony of the defendant’s expert. In allowing discovery, the court noted that the information in the database was relatively mechanical in nature. It ordered the plaintiffs to share the defendant’s cost in making the computerized material available.

A party may discover facts known or opinions held by a non-testifying expert only upon a showing of exceptional circumstances under which it is impracticable for the party seeking discovery to obtain facts or opinions

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149 Mulroy & Wernikoff, supra note 23, at 127.
150 Id. at 128. Federal Rule of Civil Procedure 26(a)(2)(B) requires that, unless otherwise stipulated or ordered, a party must disclose in advance of trial “the date or other information considered by” an expert witness in forming the opinions to be expressed. FED. R. CIV. P. 26(a)(2)(B).
151 Barrish, supra note 87, at 704-05.
152 91 F.R.D. 393 (N.D. Ill. 1980).
153 Fauteck, 91 F.R.D. at 398.
154 Id.
155 Id.; see also Williams v. E.I. du Pont de Nemours & Co., 119 F.R.D. 648, 651 (W.D. Ky. 1987) (holding database created by defendant’s expert was discoverable to allow effective cross-examination of expert).
on the same subject by other means.\textsuperscript{156} For example, in \textit{Pearl Brewing Co. v. Jos. Schlitz Brewing Co.}, the defendant in an antitrust case sought access to a highly sophisticated computerized econometric model database that was programmed to simulate market conditions in appropriate submarkets.\textsuperscript{157} The defendant also sought access to a second set of programs designed to take the data generated by the market model and convert it into computerized damage calculations.\textsuperscript{158} The plaintiffs' testifying economic expert supervised the construction of the computer programs.\textsuperscript{159}

The plaintiffs permitted the defendant access to depose the economic trial expert along with access to a printout of the computer programs utilized in the computer models.\textsuperscript{160} The defendant, however, wanted access to the non-testifying computer experts.\textsuperscript{161} These experts had designed the actual programs, alternative models, input data, and calculations. All of these things were considered and rejected by the non-testifying experts.\textsuperscript{162} The defendant explained that, because it could not decipher the computer code, it could not understand the computer models without the expense of an inordinate amount of time, money, and resources.\textsuperscript{163} The trial court ruled that under Rule 26(b)(4)(B) the defendant was entitled, at its own expense, to inspect and to copy the entire system documentation for the computer models and to depose the non-testifying computer experts.\textsuperscript{164} The court explained:

\begin{quote}
The granting of some of defendant's discovery requests, when viewed in their proper posture, would not be unfair to plaintiffs. Defendant does not seek in this case to avoid the expense of compensating expert witnesses or to develop its own case entirely out of the mouth of its adversary's expert witness. Rather, what defendant does seek here is
\end{quote}

\textsuperscript{156} \textit{FED. R. CIV. P. 26(b)(4)(B)}.  
\textsuperscript{158} \textit{Pearl Brewing Co.}, 415 F. Supp. at 1133.  
\textsuperscript{159} \textit{Id.}.  
\textsuperscript{160} \textit{Id.}.  
\textsuperscript{161} \textit{Id.}.  
\textsuperscript{162} \textit{Id.} at 1134.  
\textsuperscript{163} \textit{Pearl Brewing Co.}, 415 F. Supp. at 1138.  
\textsuperscript{164} \textit{Id.}.
to discover the mechanical methods, tests, procedures, assumptions and comparisons which will support the conclusions of Dr. Massy, the trial expert. Dr. Massy, who purportedly will be testifying at trial about such topics as the dynamics of the Texas beer market and the impart of promotional pricing on that market, has expertise in economics but not, so far as the Court is aware, in computer technology or computer programming. Rather, as overseer of the Model and DAP Systems, Dr. Massy comprehends the basic structure of these systems but not their interstitial functioning which utilized his design and his beginning econometrics information in such a manner as to produce the results requested after “expert” computer manipulation by the two non-trial experts, Mr. Smith and Mr. Dickson. On the present record, only these two men appear to be adequately conversant in technical information to explain this computer operation.

In this case the work of these two experts translates into a mechanical extension of Dr. Massy’s primary design to its logical conclusion. Defendant contends, and plaintiffs do not seriously dispute, that its own expert, Dr. Adams, cannot properly understand, except at the expense of an inordinate amount of time, money and resources, the Model and DAP Systems because of the use by plaintiffs’ non-trial experts of several otherwise undefined short-hand codes or symbols in the computer programs comprising the systems. Such an expenditure might delay the conclusion of discovery in this already protracted case. . . . Only plaintiffs’ non-trial experts know what is represented by each coded symbol and line of the programs.

These circumstances in their totality qualify as “exceptional” under Rule 26(b)(4)(B). . . .

A party may waive the work product privilege if the computerized litigation support system is disclosed to an adversary. In In re Chrysler Motors Corp. Overnight Evaluation, upon settlement of a civil action regarding its sale of vehicles previously driven by employees with disconnected odometers, Chrysler agreed to provide a computerized database prepared in response to criminal and civil actions to the class action attorneys to expedite due diligence review, provided the plaintiffs agreed that this did not constitute a waiver of its work product privilege. Upon

165 Id.

166 See, e.g., In re Chrysler Motors Corp. Overnight Evaluation, 860 F.2d 844, 846 (8th Cir. 1988).

167 860 F.2d 844 (8th Cir. 1988).
accepting a plea from Chrysler in the criminal case, the government sought to obtain the computer data from the civil action attorneys in preparation for its sentencing hearing. The Eighth Circuit held that Chrysler had waived any work product protection by voluntarily disclosing the database to its adversaries in the civil action.

IV. Informal Electronic Discovery

A. Generally

Despite some drawbacks, the versatility, flexibility, comprehensiveness, speed, and accuracy of electronic databases expand and enhance an attorney's traditional discovery methods. If an executive, company, or product has been involved in a controversy, electronic databases can aid an attorney in identifying comments by the media, colleagues, competitors, and experts. Industry and professional publications, legislative hearings, and conferences may confirm or disprove an expert witness's credentials. The possible uses of electronic databases as a discovery resource are endless. Some examples of how electronic data bases can be used to prepare for litigation follow.

- Slip opinions are frequently available online before they are published or are in print.
- WestLaw and Lexis include significant numbers of unpublished opinions in their data bases.
- Legislation can be tracked electronically.
- Background information about a relevant industry or profession is frequently accessible through financial reports, brokers' analyses, trade journals, and specialized newsletters.
- Jury verdict information and settlement amounts can be readily accessed electronically.
- The name and address, state of incorporation, registered agent for service of process, names of directors and officers, trademarks, patents,

\[^{168} In re Chrysler Motors Corp., 860 F.2d at 844.\]

\[^{169} Id. But see United States v. AT&T Co., 642 F.2d 1285 (D.C. Cir. 1980) (stating parties with common interests in litigation can share computer-based litigation support system without waiving work product protection).\]
and company announcements can be obtained through electronic data bases.

- Securities and Exchange Commission reports can be examined electronically.
- Assets of the opposing party can often be determined through electronic searches. For example, personal and bankruptcy petitions are searchable.
- Nationwide electronic telephone directories aid in finding people.

B. Online Electronic Services

WestLaw, Lexis, CompuServe, Information America, and America Online are examples of online services that provide a wide array of legal and nonlegal information. Both WestLaw and Lexis provide topical listings of available information. These systems have the flexibility to search through their computerized databases, including cases, statutes, codes, journals, articles, news services, and business information, to retrieve requested information which may have been overlooked or misindexed in print publications.

The documents available on these services are from a variety of sources: newspapers, trade journals, general magazines, television program transcripts, Supreme Court briefs and oral argument transcripts, selected jury verdicts, American Bar Association publications, hearings, courts, legislatures, publishers, associations, law reviews, government agencies, dispute settlements, and international conventions. Examples of information that can be retrieved from these sources include opinions of a particular judge on a specific issue, research articles and court statements by an expert witness, industry reports, product information, scientific research, company financial information, and bankruptcies.

However, the success of the search depends upon the skill of the searcher. If the search terms have multiple meanings or can be expressed in synonyms or spellings not identified by the searcher or appear in different contexts, the search results can be flawed. Inadvertent system mistakes, such as typographical or spelling errors, omitted case pages, or the use of abbreviations or acronyms by courts can increase the searcher's difficulties. Relevant documents can be missed or an unmanageable number of documents may be retrieved.
The speed with which online information becomes available is one of the primary advantages of online services. United States Supreme Court decisions are available within minutes after being handed down by the Court. Legislative searches can be used to locate basic volumes, pocket parts, and recently enacted statutes.

Information America is a fast growing database operated by the West Group. Searchable through WestLaw by business name or executive affiliation, Information America can be used to locate assets, find people, search corporate records, search liens and judgments, determine professional licensure, examine count records, examine bankruptcy records, examine real property records, review corporate affiliation history, and research business-financial information based on Dun’s Business Records. Dun’s Records includes some private company information that is often elusive.

C. The Internet

The Internet's information power lies in its global networks of computers, transmitting primary sources, and other significant information over high-speed communication systems. Services such as CompuServe, America Online, and others provide easy access to the Internet.

The World Wide Web is the technological vehicle that provides access to the Internet's research materials. Legal information on the web includes some federal appellate court opinions, Supreme Court decisions, the United States Code, the Federal Register, the Code of Federal Regulations, the Congressional Record, pending federal legislation, White House papers, Securities and Exchange Commission filings on public companies, and Department of Justice developments.\(^\text{170}\)

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\(^{170}\) One of the better places to discover law-related lists is through the list of lists maintained by Lyonette Louis-Jacques at the University of Chicago. E-Mail: llou@midway.uchicago.edu or gopher to gopher://lawnet.uchicago.edu.

The following Web sites may be helpful:

1. *The Legal Information Institute* <http://www.law.cornell.edu/supct/index.html>. The Legal Information Institute at Cornell Law School provides the full text of recent Supreme Court decisions, as well as biographical information and pictures of the justices, with links to decisions they have written.

2. <ftp://ftp.cwru.edu>. Files of Supreme Court decisions can be downloaded through this jointly sponsored offering of Case Western Reserve University and the Court’s Hermes Project.
There are websites for exploring legal information from Canada and Cuba, an international criminal justice website, a multinational monitor for tracking corporate activity worldwide, and product liability information. Business and universities are setting up their own sites or home pages.

Although the services that provide Internet connections charge access fees, much of the information on the Internet is free. However, unlike WestLaw and Lexis, which are organized and structured to prompt the user to locate reliable information quickly and easily, the Internet is a loosely structured environment, requiring a long learning curve to locate relevant information. In addition, with the exceptions of primary sources such as the Government Printing Office, the Internet information is not necessarily valid or reliable; it is difficult to identify the source of much of the Internet information.

V. Conclusion

In today's cyber-world, paper discovery is no longer adequate. Careful attention must be given to discovery of information and material created or stored electronically. In addition, electronic technology may afford efficient ways for conducting discovery.

Effective use of electronic discovery requires an understanding of how material is generated or stored electronically. In some situations, it may be necessary to utilize the service of experts to assist in conducting the discovery. Electronic discovery requires careful planning and organization.

3. Indiana University School of Law at Bloomington <http://www.law.indiana.edu>. This is a basic gateway to legal resources throughout the Internet.

4. Chicago-Kent College of Law Homepage <http://www.kentlaw.edu/>. This is an excellent starting point, including the Legal Domain Network which leads to most of the news groups and lists on legal issues.

5. The Seamless Website <http://seamless.com/>. The Seamless Web Site on Law and Legal Resources includes original materials on legal issues, some legal advertising, and links to other law-related sites.

6. American Bar Association Homepage <http://www.abanet.org>. This is the electronic home of the American Bar Association, with information about its resources, including articles from the ABA Journal.


8. Thomas-Legislative Information on the Internet <http://thomas.loc.gov>. This web site contains Congressional materials, including the full text of House and Senate bills and the Congressional Record.