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It is important for defense lawyers to search for cost-effective, defensible methods of preservation, collection, review and production that may ultimately win cases.

Using Technology to Reduce E-Discovery Costs

In the beginning, e-discovery, or the discovery of electronically stored information, was mostly limited to patent and trademark litigation, securities lawsuits, class actions, and catastrophic loss cases. In other words, it

mainly arose in high-cost litigation. However, with the revisions to the Federal Rules of Civil Procedure and the state court rules that have followed, discovery of electronically stored information (or ESI) has been thrust upon the desks of virtually all litigators. There is no question that in almost every type of case a party has some type of potentially relevant material in some electronic format. A massive amount of information is created, exchanged, and stored electronically: “Conventional documents originate as computer files, e-mail is taking the place of both telephone calls and postal letters, and many, if not most, commercial activities are transacted using computer-based business processes. Electronically stored information is commonplace in our personal lives and in the operation of businesses, public entities, and private organizations.” Barbara J. Rothstein *et al.*, *Managing Discovery of Electronic Information: A Pocket Guide for Judges*, at 1 (Fed-

eral Judicial Center 2007). ESI includes e-mails, webpages, word processing files, databases stored in the memory of computers, on hard drives, floppy disks, DVDs, and CDs, and in flash memory, also known as “thumb” or “flash” drives or memory sticks. *Id.* at 2.

This article will address issues related to e-discovery, how the new rules apply to all parties, and technologies that can aid in lowering the costs of e-discovery for the benefit of everyone involved.

Federal and State Court Rules

Ignoring e-discovery is no longer an option when a case is brought in federal court. The Federal Rules of Civil Procedure mandate that all parties address issues related to e-discovery as early as the meet and confer conference under rule 26. The rules require that “a discovery plan must state the parties’ views and proposals on...any issues about disclosure or discovery of electron-



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ically stored information, including the form or forms in which it should be produced.” See FED. R. CIV. P. 26(f)(3)(C). The rules also provide guidance on how a party should respond to a request for production of ESI and how to produce ESI when it is requested. See FED. R. CIV. P. 34(b)(2)(D)–(E). Additionally, the rules provide a safe harbor for circumstances in which ESI is lost as a result of the routine, good-faith operation of a company’s document retention policy. See FED. R. CIV. P. 37(e).

From the east coast to the west coast, federal courts are actively applying these new e-discovery rules. For example, in *Mosaid Technologies Inc. v. Samsung Electronics Co., Ltd.*, the district court in New Jersey held:

As discoverable information becomes progressively more digital, e-discovery, including e-mails and other electronic documents, plays a larger, more crucial role in litigation... Among other things, that [e-discovery] rule requires counsel to investigate how a client’s computers store digital information, to review with the client potentially discoverable evidence, and to raise the topic of e-discovery at the Rule 26(f) conference, including preservation and production of digital information. Unless and until parties agree not to pursue e-discovery, the parties have an obligation to preserve potentially relevant digital information. Parties who fail to comply with that obligation do so at the risk of facing spoliation sanctions.

348 F. Supp. 2d 332, 339 (D. N.J. 2004).

Similarly, in the case *In re Flash Memory Antitrust Litigation*, a federal court in California held:

Until the parties reach an agreement on a preservation plan or the Court orders otherwise, each party shall take reasonable steps to preserve all documents, data, and tangible things containing information potentially relevant to the subject matter of this litigation. In addition, counsel shall exercise all reasonable efforts to identify and notify parties and non-parties of their duties, including employees of corporate or institutional parties, to the extent required by the Federal Rules of Civil Procedure.

2008 WL 1831668, *1 (N.D. Cal. 2008).

The new e-discovery rules are also beginning to make their way to the state

level. In fact, the majority of states have adopted rules governing the discovery of ESI. Those 30 states are shown in Figure 1:

On June 29, 2009, California even enacted its own Electronic Discovery Act, establishing procedures to govern the discovery of ESI. There is no doubt that the remaining 20 states will eventually enact their own rules regulating the e-discovery process, and it is vital that litigators in all states begin to learn and follow these freshly minted rules.

Sanctions: The Importance of Adhering to E-Discovery Rules

Spoliation is “the destruction or significant alteration of evidence, or the failure to preserve property for another’s use as evidence in pending or reasonably foreseeable litigation.” *Zubulake v. UBS Warburg, LLC*, 220 F.R.D. 212, 216 (S.D.N.Y. 2003) (quoting *West v. Goodyear Tire & Rubber Co.*, 167 F.3d 776, 779 (2d Cir. 1999)). Spoliation can be intentional or unintentional. It can occur by simply flipping a computer’s on-switch, which can cause deletion of temporary files. Spoliation can also occur by simply clicking on a file and changing the date that a file was last accessed. See *Autotech Techs. Ltd. Partnership v. Automation-direct.com, Inc.*, 248 F.R.D. 556 (N.D. Ill. 2008); *Aguilar v. Immigration and Customs Enforcement Div. of U.S. Dept. of Homeland Security*, 2008 WL 5062700 (S.D.N.Y. 2008) (discussing metadata in general and the production of metadata).

Depending on the egregiousness of the discovery abuse, courts have wide discretion regarding the type and degree of sanctions that they can impose. However, many courts have handed down severe punishments for failing to adhere to e-discovery protocols. Sanctions can range from attorneys’ fees, adverse inference instructions, monetary sanctions, preclusion of evidence, fines, and even the granting of default judgments. See, e.g., *3M Innovative Props. Co. v. Tomar Elecs.*, 2006 WL 2670038 (D. Minn. 2006); *In re Napster, Inc. Copyright Litigation*, 2006 WL 3050864 (N.D. Cal. 2006); *Network Sys. Architects Corp. v. Dimitruk*, 2007 WL 4442349 (Mass. Super. 2007).

In one of the well known e-discovery abuse cases, United States Magistrate Judge Barbara Major of the Southern District of California issued heavy sanctions to sev-

eral attorneys who represented Qualcomm. See *Qualcomm Inc. v. Broadcom Corp.*, 2008 WL 66932 (S.D. Cal. 2008). Finding that Qualcomm intentionally failed to produce over 46,000 responsive e-mails and engaged in other discovery misconduct, the court imposed monetary sanctions of \$8,568,333, which represented the opposing party’s fees and costs incurred

Many courts have handed down severe punishments for failing to adhere to e-discovery protocols.

in the litigation. The court also ordered that certain in-house and former outside counsel participate in a comprehensive “Case Review and Enforcement of Discovery Obligations” program to create a case management protocol that would serve as a model for future litigations. The court even referred six attorneys to the State Bar of California for investigation of possible ethical lapses. All of these discovery sanctions were issued because Qualcomm failed to properly conduct e-discovery.

In a similarly eye-opening case, the District Court of New Jersey imposed serious sanctions against a defendant for failing to properly conduct ESI discovery. Those sanctions included:

- Deeming certain facts admitted by the defendant for all purposes;
- Precluding evidence that was not produced by the defendant in discovery;
- Striking various privilege assertions by the defendant;
- Directing the payment of substantial costs and attorneys’ fees related to the defendant’s misconduct;
- Imposing fines in an amount to be determined after the court considered the defendant’s financial condition; and
- Appointing a discovery monitor, at the defendant’s expense, to review the defendant’s compliance with the Court’s discovery orders for failing to search e-mails and permanently losing other e-mails pursuant to standard practices.

Wachtel v. Health Net, Inc., 2006 WL 2538935 (D.N.J. 2006).

Parties and their counsel who ignore and shirk their responsibilities under e-discovery rules do so at their own peril. Like it or not, the rules governing e-discovery are here to stay, and it is imperative that litigators begin to understand the intricacies of ESI.

Limiting the Costs of Electronic Discovery and Recent Technologies

Preservation requirements begin when a client knows or reasonably should know

that a potential claim exists. *See ACORN v. County of Nassau*, 2009 WL 605859 (E.D.N.Y. 2009); *Cache La Poudre Feeds, LLC v. Land O'Lakes, Inc.*, 244 F.R.D. 614 (D. Colo. 2007). When preservation occurs, counsel can take several steps to limit the cost of e-discovery. These steps include:

- Choosing the proper method of preservation;
- Limiting the preservation to potentially relevant sources;
- Determining relevant key players and time frames;
- Excluding shared drives, if possible;

- Culling data to preserve only relevant material by using limited, but educated, search terms or iterations of those terms in various search methodologies;
- Obtaining several quotes from various qualified vendors to ensure that you are getting the best price;
- Researching current technology and technological advancements; and
- Retaining qualified counsel to assist you with preservation and to ensure that your plan is defensible if challenged to the court, if necessary, depending on your own level of expertise or your firm's expertise.

Each of these eight topics could be discussed at length, and there is simply not enough space to detail each individual process. This article will expansively cover topic seven and introduce some of the most recent technologies that can be used to contain the costs of e-discovery.

And make no mistake about it, e-discovery can be very costly. Using current methodology, to preserve, process, review, and produce one terabyte (TB) of data—or on the average 7,500,000 pages—would cost between \$1,000,000 and \$1,500,000. Preservation alone can be expensive. Each hard drive can cost between \$100 to \$450 to preserve, and each back-up tape can cost \$350 to \$450 to preserve.

The technology associated with e-discovery is constantly changing. New products and updated versions of existing products are injected into the marketplace on nearly a daily basis. These developments are being implemented in large part to address the expense of e-discovery. With so many e-discovery vendors in the market today, this article highlights only a small portion of some of the recent developments in technology the authors, with the assistance of Dennis Kiker of Fios, Inc., identified as interesting developments and how these products can offer a cost-effective approach to ESI discovery. These products are compiled for informational purposes only and this article is not intended to be an endorsement thereof.

CaseCentral

On June 22, 2009, CaseCentral announced the release of the CaseCentral Early Case Assessment (ECA). It is “the industry’s first ECA product to seamlessly integrate

Figure 1.

State	Rule(s)	Effective Date
Alaska	R. Civ. P. 16, 26, 33, 37, 45	Apr. 15, 2009
Arizona	R. Civ. P. 16, 26, 26.1, 26.2, 33, 34, 37, 45	Jan. 1, 2008
Arkansas	R. Civ. P. 26(b)(5)	Jan. 10, 2008
California	Electronic Discovery Act	June 29, 2009
Connecticut	Practice Book, Superior Court: Procedures in Civil Matters §13–9	Jan. 1, 2006
Florida	1.201 Complex Litigation	May 28, 2009
Idaho	R. Civ. P. 33, 34	July 1, 2006
Illinois	Supreme Court Rules 201(b)(1), 214	Jan. 1, 1996
Indiana	Trial Court Practice Rules 26, 34, 37	Jan. 1, 2008
Iowa	R. Civ. P. 1.503, 1.504, 1.507, 1.509, 1.512, 1.517, 1.602, 1.1701	May 1, 2008
Kansas	R. Civ. P. 60-216, 226, 233, 234, 237, 245	July 1, 2008
Louisiana	R. Civ. P. 1424, 1460–1462	June 25, 2007 (approved)
Maine	R. Civ. P. 16, 26, 33, 34, 37	Aug. 1, 2008
Maryland	R. Civ. P. 2-402, 421, 422, 424, 433, 504, 504.1, 510	Jan. 1, 2008
Michigan	R. Civ. P. 2.302, 2.310, 2.313, 2.506	Jan. 1, 2009
Minnesota	R. Civ. P. 16, 26, 33, 34, 37, 45	July 1, 2007
Mississippi	R. Civ. P. 26(b)(5)	May 29, 2003
Montana	R. Civ. P. 16, 26, 33, 34, 37, 45	Feb. 28, 2007
Nebraska	Ct. R. Disc. 6-333, 334, 334A	July 18, 2008
New Hampshire	Superior Ct. R. 62	Mar. 1, 2007
New Jersey	Superior Ct. R. 1:9, 4:5B, 4:10, 4:17, 4:18, 4:23	Sept. 1, 2006
New York	Rules of the Supreme and County Cts. 8, 202.70	Jan. 17, 2006
North Carolina	Local Rules of Business Ct. 17.1, 18.6	July 31, 2006
North Dakota	Civ. P. R. 16, 26, 33, 34, 37, 45, Form 20	Mar. 1, 2008
Ohio	R. Civ. P. 16, 26, 33, 34, 37, 45	July 1, 2008
Tennessee	Civ. P. R. 16.01, 26.02, 26.06, 33.03, 34.01, 34.02, 37.06, 45.02, 45.04, 45.07, 45.08	July 1, 2009
Texas	R. Civ. P. 196.4	Jan. 1, 1999
Utah	R. Civ. P. 26, 33, 34, 37, 45	Nov. 1, 2007
Virginia	R. Civ. P. 4:1, 4:4, 4:8, 4:9, 4:13	Jan. 1, 2009
Wyoming	R. Civ. P. 26, 33, 34, 37, 45	July 1, 2008

with active litigation review and production software... [The technology] enables clients to start with ECA and extend through analysis, review, production and post-production re-use, facilitating collaborative assessments of new case merits and liabilities, application of first pass review, and real-time transfer to active review if required, all at a price point that shatters the current ECA pricing model." Press Release, CaseCentral Extends eDiscovery Review Platform with Industry's First Integrated Early Case Assessment (June 22, 2009), <http://www.casecentral.com/pr-integrated-eca.php>.

"Early Case Assessment is a process, supported by technology, that can be used to decrease the volume of data for active review, estimate liability, perform strategic case planning, estimate resource requirements, and more," said Steve d'Alencon, chief marketing officer for CaseCentral. "CaseCentral allows a client to start with early case assessment and extend their process through analysis, review, production, and postproduction."

CaseCentral's technology puts early case assessment in close proximity to active review, meaning that money is saved since the data does not need to be exported into other search tools. This not only helps to reduce e-discovery costs, but also increases consistency, repeatability, and measurability. Mr. d'Alencon continued, "The primary issue we face today is responding to market demand and training clients to be most effective in their use of our products. End-user training and support is one of our primary objectives."

In terms of pricing, CaseCentral reports that some companies can charge clients a significant premium on perceived value, often amounting to \$1,000 per gigabyte. CaseCentral prices for Early Case Assessment start at \$10 per gigabyte per month, and it offers fully searchable content for evaluation.

Digital Mandate LLC/RenewData

On August 1, 2008, Digital Mandate LLC released Vestigate, which is a "human-based, decision-making review software platform that accelerates access to key documents, provides measureable accuracy to ensure that relevant documents have not been missed, and significantly reduces project

cost and time." <http://www.renewdata.com/pdf/ds-prodesi-Vestigate.pdf>. Digital Mandate LLC, along with its Vestigate technology, was acquired by RenewData on August 12, 2009.

"Vestigate enables a small number of reviewers to quickly and accurately identify relevant documents, bulk tag similar information and prove... that no relevant documents were missed," according to Rich Cohen, executive vice president of Legal Services at RenewData. He continued, "It allows a small team of reviewers to quickly identify what's relevant in a given document by using a mouse to highlight critical language and then tag the document to the appropriate issues."

Vestigate also utilizes statistical sampling for quality control during document review. "This step provides the confidence that one has taken every reasonable step to locate and review critical data," reported Mr. Cohen.

RenewData estimates that clients can reduce the cost of document review by an average of 50 percent. "Vestigate typically requires only a handful of reviewers, usually between 6 and 12 people, that eliminates the need for armies of contract labor to conduct the review process," said Mr. Cohen. "Because Vestigate review teams are small and the time to conduct the review is significantly reduced, substantial savings can be achieved while introducing a more knowledgeable reviewer into the process," he said.

FTI Consulting, Inc.

On August 24, 2009, FTI Consulting, Inc., declared "the launch of Ringtail QuickCull, a new pre-configured hardware and software package for e-discovery... QuickCull enables corporations to cull and analyze data on-premise prior to review by outside counsel, providing earlier insight into data and dramatic e-discovery cost reduction..." Press Release, FTI Technology Launches Ringtail QuickCull Appliance for In-House E-Discovery (Aug. 24, 2009), http://www.fticonsulting.com/en_US/about/news/pressreleases/Pages/FTITechnologyLaunchesRingtailQuickCull@ApplianceforIn-HouseE-Discovery.aspx.

Legal review of documents accounts for the most expensive portion of e-discovery, comprising up to 80 percent of e-discovery costs. Ringtail QuickCull is a document review product in the portfolio of FTI Con-

sulting's Ringtail Legal that strives to lower those costs. "Ringtail is a fully integrated visual analysis, review, redaction and production solution that covers all the processes on the right hand side of the EDRM model," said Mike Kinnaman, senior managing director of FTI Technology, a business unit of FTI Consulting. "Customers benefit greatly from the streamlined workflow and significant advancements in the speed, flexibility and cost-effectiveness of e-discovery and document review."

Integreon

On August 24, 2009, Integreon launched "its eView 3.0 platform for hosted document review. eView is Integreon's marquee offering for efficient workflow management and productivity tracking of complex attorney document review." Press Release, Integreon Releases eView™ 3.0 for Increased Productivity of Attorney Document Review (Aug. 24, 2009), <http://www.integreon.com/news-resources/press-releases/2009/integreon-releases-eview-3.0-for-increased-productivity-of-attorney-document-review.html>.

Integreon has been providing hosted document review services for over seven years. "What really separates eView from other review tools on the market is the automation of batching document assignments, and the unique way eView's configurable workflow can be designed," said Debra Rozier, chief innovation officer of Integreon. "eView provides our clients with more advanced workflow management and extensive reporting capabilities."

Integreon also has attorney reviewers on staff, which can help to reduce e-discovery costs. "The fact that we have reviewers on staff allows us to offer more than just a technology tool for our clients," Ms. Rozier continued. "We're able to package the tool and reviewers into a very cost-effective offering that is all managed under one roof."

In addition, Integreon also provides a range of other nondiscovery legal and knowledge outsourcing services. "Because we are not just a software developer, but rather a full service e-discovery vendor, our clients benefit from working with one provider, which can be very beneficial, especially when a client needs something on short notice," she said.

While it has not yet been publicly announced, Integreon is about to launch eView

3.1. “eView 3.1 will have the added capability of being able to review foreign language documents,” Ms. Rozier reported.

Clearwell Systems, Inc.

On August 17, 2009, Clearwell announced Version 5.0 of its e-discovery platform: “Unlike prior versions which focused on processing, early case analysis, and first-pass review,

New products and updated versions of existing products are injected into the marketplace on nearly a daily basis.

this release extends Clearwell’s capabilities in two directions: upstream, by adding pre-processing; and downstream, by adding document-by-document review and production.” Aaref A. Hilaly, Clearwell Expands Its E-Discovery Platform with New Modules for Pre-Processing, Review, and Production, e-discovery 2.0 (Aug. 17, 2009), <http://www.clearwellsystems.com/e-discovery-blog/2009/08/17/clearwell-expands-its-e-discovery-platform-with-new-modules-for-pre-processing-review-and-production/>. In an entry announcing Version 5.0 on the blog, e-discovery 2.0, President and CEO Aaref A. Hilaly wrote:

A typical e-discovery process today may involve as many [as] 4 different tools: one for filtering by custodians or date range, another for de-duplication and keyword search, another for load file creation, and yet another for review and production.... The only solution is to have a single product that can manage collected data from soup (filtering/pre-processing) to nuts (production). Prior to today’s announcement, that product did not exist: there was no single integrated product that could do everything from process data to review and produce it. And that, in summary is why Clearwell is releasing Version 5.0.

Id.

Clearwell champions that its “E-Discovery Platform is the industry’s

first fully integrated appliance that provides pre-processing, processing, analysis, review, and production capabilities.” Those capabilities deliver the following benefits to their customers:

- Accelerate early case assessments from weeks to hours;
- Cull-down data by up to 90 percent;
- Increase review throughout and consistency;
- Reduce movement of data across multiple, disparate tools; and
- Improve defensibility of the e-discovery process.

Clearwell Systems, Clearwell E-Discovery Platform 5.0 Product Datasheet (July 2009).

“The pre-processing module in Version 5.0 delivers interactive analytics that enable users to graphically view summary and detailed statistics by collection or by custodian prior to processing,” said Kamal Shah, vice president of product management and marketing, Clearwell Systems.

InterLegis, Inc.

On October 29, 2008, InterLegis, Inc., unveiled a new review product, Discovery360, the e-discovery “industry’s first available native file redacting capability” tool. Press Release, InterLegis Announces Industry’s First Native File Redaction Capability for Web-based Review (Oct. 28, 2009), <http://www.interlegis.com/news-item.html/56>. “Discovery360 is an end-to-end solution,” said Kevin Carr, president of InterLegis, Inc. “Legal teams can load up collected data and work within a single platform through culling, processing, review assignment or reporting, review, and production. It gives users a wide range of options to help them find documents they need.”

Discovery360 also offers advanced culling. Mr. Carr continued, “It is critical to reduce collections to the smallest, most relevant set possible. By eliminating...irrelevant data from collections, legal teams can reduce the ‘discovery ripple effect’ down the line.” This type of advanced culling allows a person to quickly identify what documents are truly relevant, which means less information to review and ultimately, saves money in the end.

InterLegis, Inc., also offers “relevance-only” pricing. “We do not charge for data from the original collection. We only charge

for the remaining set of data after it has been culled down to that which is truly relevant,” said Mr. Carr. “We charge a single per-gigabyte fee on relevant data. There’s no nickel and diming for our services.”

CT Summation

On August 25, 2009, CT Summation premiered its “next generation” iBlaze product in partnership with Rosen Technology Resources, stating that “Users can now benefit from unprecedented levels of speed and accuracy in the electronic document management, review, analysis, and production process.” Press Release, CT Summation Bolsters eDiscovery Capabilities with iBlaze Enhancement and Strategic Partnership (earthtimes.org Aug. 25, 2009), <http://www.earthtimes.org/articles/print-pressstory.php?news=936566.htm>. iBlaze 3.0 allows users to search for redacted documents, quickly review redacted language, and globally redact the same portion of each image.

The original iBlaze product was first developed in 1988. “Our inception back then was to create efficiency and to allow an individual to review documents quickly,” said Bryant Bell, senior director of marketing with CT Summation. “The challenge today is the proliferation of all the electronic information that exists. Documents can come from all different types of applications.”

CT Summation prides itself in offering services that can handle all phases of litigation, ranging from providing transcripts to document management tools. iBlaze even can link directly to a court reporter, so that an attorney can do real-time review as a court reporter types pages. “CT Summation provides a good litigator with the organization he needs so he can deliver chaos to the opposing counsel,” said Mr. Bell. “At the end of the day, e-discovery does not exist unless there is litigation.”

Technologies in Development

There is a widespread belief that lawyers need new and better methods and techniques to improve search process efficiency due to the voluminous information involved in civil litigation. As noted by the Sedona Conference, “In many settings involving electronically stored information, reliance solely on a manual search process

for the purpose of finding responsive documents may be infeasible or unwarranted. In such cases, the use of automated search methods should be viewed as reasonable, valuable, and even necessary.” The Sedona Conference Best Practices Commentary on Search & Retrieval Methods, at 194 (Aug. 2007), http://www.thosedonaconference.org/content/miscFiles/publications_html?grp=wgs110. According to Jason Baron, the editor-in-chief of this commentary, “Practice Point 1 is saying that, increasingly in litigation, lawyers will need to think about and adopt automated techniques in dealing with the expanding universe of ESI. At the same, time manual review clearly has a place and will always have a place in litigation. The key is being smarter about what techniques will be helpful to deal with the volume and complexity of ESI.” Interview with Jason Baron, Editor-in-Chief, The Sedona Conference Best Practices Commentary on Search & Retrieval Methods (Oct. 15, 2009.)

In other words, as automated analytical methodologies have developed, with testing over time the idea that keyword searching and human review alone are the only defensible search and review methodologies has become a thing of the past. According to Judge Grimm, “[w]hile keyword searches have long been recognized as appropriate and helpful for ESI search and retrieval, there are well-known limitations and risks associated with them, and proper selection and implementation obviously involves technical, if not scientific knowledge.” *Victor Stanley, Inc. v. Creative Pipe*, 250 F.R.D. 251, 260 (D.C. Md. 2008) (citing *United States v. O’Keefe*, 537 F. Supp. 2d 14, 24 (D.D.C. 2008)).

Elaborating further, Judge Grimm wrote,

In addition to keyword searches, other search and information retrieval methodologies include: probabilistic search models, including “Bayesian classifiers” (which searches by creating a formula based on Values assigned to particular words based on their interrelationships, proximity, and frequency to establish a relevancy ranking that is applied to each document searched); “Fuzzy Search Models” (which attempt to refine a search beyond specific words, recognizing that words can have multi-

ple forms. By identifying the “core” for a word the fuzzy search can retrieve documents containing all forms of the target word); “Clustering” searches (searches of documents by grouping them by similarity of content, for example, the presence of a series of same or similar words that are found in multiple documents); and “Concept and Categorization Tools” (search systems that rely on a thesaurus to capture documents which use alternative ways to express the same thought). *Id.* at 261 (citing Sedona Conference Best Practices, at 217–23).

Because of the known problems with and limitations of keyword searching, a number of individuals are studying methods and techniques to improve our capacity to retrieve the relevant information in a data set. According to George Paul and Jason Baron, “Emerging solutions to lawyers’ search problems over the coming decade and beyond could likely include a synthesis of ‘intelligent search engine’ applications culled from the areas of artificial intelligence, neural networks, and other forms of information filtering and machine-learning techniques.” George L. Paul & Jason R. Baron, *Information Inflation: Can the Legal System Adapt?* 13 RICH. J.L. & TECH. 10, 39–40 (2007), <http://law.richmond.edu/jolt/v13i3/article10.pdf>. These authors predict that lawyers will “one day [be] employing even more advanced science fiction-sounding search techniques, derived from current research in the fields of nanotechnology, including quantum computing and bioinformatics.” *Id.* at 40.

In addition to applying analytics to the ESI search process, analytics are proving useful in reducing the amount of ESI that requires review. According to the Sedona Conference,

A number of legal service providers recently have begun offering various forms of automated tools that promise to significantly reduce the number of electronic documents to be manually reviewed by extracting the documents most likely to be responsive to a discovery request, and leaving the remainder unselected and unreviewed.... [For example,] to conduct an automated search process utilizing statistical sampling, the first step would be to effectively share and transfer knowledge

among counsel and the managing team and those with knowledge of the corpus of ESI that is the subject of discovery. The knowledge gained in this process will be used in the development of one or more search strategies (e.g., Boolean searches, concept searches, metadata filters, language-based approaches using taxonomies and ontologies, statistical clustering techniques, or other proprietary strategies). Once the responsive data set has been characterized, a random sample of categorized material is chosen and reviewers will review this small, but statistically significant, sample. This random sample will contain both responsive and unresponsive material and reviewers classify these documents as they normally would under a manual review. The results of this classification are then compared to the results reached by the chosen categorization method(s).... Adjustments are made to the search strategy.... This iterative process of sampling and refinement is continued until the rate of difference between the automated methods of human review meets the acceptable threshold of accuracy defined for the project. Once it has, the final categorization is run on the entire data set and the responsive documents can then be prepared for production, subject to any further privilege or other manual reviews as deemed necessary.

The Sedona Conference Commentary on Achieving Quality in the E-Discovery Process, at 17 (May 2009), http://www.thosedonaconference.org/content/miscFiles/publications_html?grp=wgs110. This process, and others identified by the Sedona Conference, can result in much more efficient and cost-effective approaches to reviewing a data set than an “eyes-on” review of every document.

With all that said, what is on the horizon? There are some exciting concepts that we can all look forward to reading more about. Recently, two professors, Kevin Ashley and Will Bridewell, presented a paper at the DESI III/ICAIL 2009 Global E-Discovery/E-Disclosure Workshop delineating three techniques that are increasingly being put to use to do efficient automated reviews. Specifically, they outlined three techniques for improving the process of automating anal-

ysis and retrieval of electronically stored information. Kevin D. Ashley & Will Bridewell, *Emerging AI + Law Approaches to Automating Analysis and Retrieval of Electronically Stored Information in Discovery Proceedings* (DESI III/ICAIL 2009 Global E-Discovery/E-Disclosure Workshop). The techniques that they suggest include machine learning, hypothesis ontology, and social network analysis. In machine learning, “examples of documents that have been classified according to the theory of relevance can be used to train an automated classifier to identify and classify other similar documents.” *Id.* at 5. Hypothesis ontology comprises “a vocabulary of object (agents) and processes, associated with recurrent areas of interest in e-Discovery such as knowledge transmission in corporate or commercial settings and defines the relationships in which these entities can participate.” *Id.* at 6. Finally, social network

analysis involves creating “graphs representing probable social interactions among a group of people”...and could enable a system to infer which individuals most likely communicated information or had knowledge relevant to a query.” *Id.* (citing Schwartz and Wood, 1993; Agrawal *et al.*, 2003). Whether and to what extent artificial intelligence can equal or exceed the quality of a human review is a question for which we may soon know the answer.

Conclusion

E-discovery, or the discovery of electronically stored information, is not going to fade into the night or simply go away. Whether attorneys like it or not, the world will continue to become more reliant and dependent on digital information and technology. Civil litigation and e-discovery will only continue to become even more intertwined as time passes. Today, “roughly three out

of four discovery orders require e-mail to be produced as part of the discovery order.” Osterman Research White Paper, *The Growing Importance of E-Discovery on Your Business 1* (June 2008). It is important for defense lawyers to begin to learn about e-discovery, taking the offensive to uncover useful and relevant evidence that can ultimately win or lose cases.

One final and critical point is that the end user should always be wary. In addition to those technologies discussed above, which the authors do not seek to promote in any way but are only discussed as evidence of ever-growing technological advancements, there are many new products that are being touted in the market. Some will prove very valuable, while others may not. But as e-discovery continues to expand, the search for cost-effective, defensible methods of preservation, collection, review, and production must be found. 