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THE SEDONA CONFERENCE®

Commentary on Achieving Quality in the E-Discovery Process

A Project of The Sedona Conference®
Working Group on Best Practices
for Document Retention & Production

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The Sedona Conference® Commentary on Achieving Quality
in the E-Discovery Process

A Project of The Sedona Conference® Working Group on Best Practices for Document Retention and Production (WG1)

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Preface & Acknowledgements

Welcome to another major publication in The Sedona Conference ® Working Group Series (the "WGS" ®): *The Sedona Conference Commentary on Achieving Quality in the E-Discovery Process*. This effort is an outgrowth of our Working Group on Electronic Document Retention and Production (WG1) and represents the work of a diverse group of lawyers and representatives of firms providing consulting and legal services to the legal tech community.

The mission of Working Group 1 of The Sedona Conference has been to provide the bench and bar with educational guides with the aim of describing what constitute best practices in the area of e-discovery. The present Commentary recognizes that the exponentially increasing volume of electronically stored information (ESI) that is stored and made subject to litigation, investigations, and regulatory activities, necessitates fundamental changes in thinking and practice on the part of the legal profession. As outlined here, these include greater reliance on automated methods in gauging the quality of document productions, including the use of sampling and other forms of measurement, as well as greater attention paid to project management of the e-discovery process. This Commentary is intended to be read in conjunction with *The Sedona Conference Commentary on the Use of Search and Information Retrieval Methods in E-Discovery* (2007), which recognized the need for automated processes being utilized to find relevant electronic evidence, and urged that best practices include new ways of thinking about that subject. As is the case with respect to prior commentaries, we fully understand that the matter of what constitutes best practices in maintaining "quality" in a particular legal case will necessarily be subject to change, given the accelerating pace of technological developments that the law is struggling to keep up with. We hope that our efforts will assist the legal profession in this area, and we welcome all feedback at tsc@sedona.net.

The present Commentary was originally conceived at the Mid-Year Meeting of WG1 in Phoenix, Arizona, in the Spring of 2007. Through the efforts of many individual contributors, several successive drafts were prepared for comment by the full WG1 membership in successive mid-year and annual meetings. I especially want to acknowledge the contributions to the overall success of this project made by Jason R. Baron and Macyl A. Burke, who took the lead roles in editing the Commentary, and managing the efforts of the editorial team, respectively. I also wish to acknowledge the invaluable editorial assistance provided by senior contributing editor Thomas Y. Allman, as well as the drafting contributions and editorial comments provided by members of The Sedona Conference® along the way, including (in alphabetical order): David Baldwin, Todd Elmer, Maura Grossman, Joe Guglielmo, Bruce Hedin, David Kessler, Joan Krammer, Kate Krause, Brandon Leatha, Mike Leonard, Joe Looby, David McCann, Tim Moorehead, Chris Paskach, Herbert Roitblat, Catherine Ronis, David Wetmore, and Thom Wisinski. I am most grateful that several leading experts in statistics, including Ian Ayres, Douglas Hubbard, and Kenneth Wachter, volunteered their time in reviewing one or more successive drafts. I wish to further acknowledge that many other individuals in WG1 and the RFP+ Vendor Panel spent time in providing comments and collaborating on earlier proposals for material to be included in the Commentary. Finally, on behalf of The Sedona Conference®, I wish to thank everyone involved in devoting their time and attention during the drafting and editing process.

Richard G. Braman
Executive Director
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April 2009

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Executive Summary

The legal profession is at a crossroads: the choice is between continuing to conduct discovery as it has "always been practiced" in a paper world — before the advent of computers, the Internet, and the exponential growth of electronically stored information (ESI) — or, alternatively, embracing new ways of thinking in today's digital world. Cost-conscious clients and over-burdened judges are demanding that parties now undertake new approaches to solving litigation problems. The central aim of the present Commentary is to introduce and raise awareness about a variety of processes, tools, techniques, methods, and metrics that fall broadly under the umbrella term "quality measures," and that may be of assistance in taming the ESI beast during the various phases of the discovery workflow process.   These include greater use of project management, sampling, and other means to verify the accuracy of what constitutes the "output" of e-discovery. Such collective measures, drawn from a wide variety of scientific and management disciplines, are intended only as an entry-point for further discussion, rather than any type of all-inclusive checklist or cookie-cutter solution to all e-discovery issues.

While the notion of expressly building in and accounting for "quality" may appear somewhat novel in the legal discovery context, there is no shortage of competing ideas about quality methods and techniques in the greater world. These include the philosophies and combined works of such individuals as Joseph Juran on quality control,[1] W. Edwards Deming on "quality management" (TQM) and "statistical process control" (SPQ),[2] Armand V. Feigenbaum on "total quality control"(TQC),[3] Phil Crosby on "zero defects,"[4] Bill Smith of Motorola and "Six Sigma,"[5] as well as "Capability Maturity Model Integration" (CMMI),[6] and a host of Japanese "lean" methods, including Kaizen (continuous improvement).[7]

As used in this Commentary, the term *quality control* involves the specific procedures, tools and techniques that ensure high quality is maintained throughout various stages of the e-discovery process (i.e., while people are conducting specific tasks). *Quality assurance*, on the other hand, refers to the methods and metrics used at the end of the process to assess and ensure that an e-discovery process is complete and accurate.

Sanctions aside, there are at least four reasons for seeking to assess the quality of an e-discovery process:

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> Failure to employ a quality e-discovery process can result in failure to uncover or disclose relevant evidence which can affect the outcome of litigation.
>
> An inadequate e-discovery process may allow privileged or confidential information to be inadvertently produced.
>
> Procedures that measure the quality of an e-discovery process allow timely course corrections and provide greater assurance of accuracy, especially of innovative processes.
>
> A poorly planned effort can also cost more money in the long run if the deficiencies ultimately require that e-discovery must be redone.

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[1] JURAN'S QUALITY CONTROL HANDBOOK (J.M. Juran & Frank M. Gryna eds. 4th ed. 1988); *see also "*Joseph M. Juran," http://en.wikipedia.org/wiki/Joseph_Juran.
[2] W. Edwards Deming, OUT OF THE CRISIS (1982); *see also* "W. Edwards Deming*," http://en.wikipedia.org/* wiki/W._Edwards_Deming*;* "Statistical Process Control," http://en.wikipedia.org/wiki/Statistical_process_control.
[3] Armand V. Feigenbaum, TOTAL QUALITY CONTROL (1961); *see also*"Armand V. Feigenbaum," http://en.wikipedia.org/ wiki/Armand_V._Feigenbaum.
[4] Philip B. Crosby*,* QUALITY IS FREE: THE ART OF MAKING CERTAIN (1979); *see also* "Zero Defects," http://en.wikipedia.org/ wiki/Zero_Defects.
[5] *See* Paul Keller, SIX SIGMA DEMYSTIFIED (2005); KPMG, "Six Sigma in the Legal Department: Obtaining Measurable Quality Improvement in Discovery Management (2006), http://www.us.kpmg.com/RutUS_prod/ Documents/12/SSigma.pdf; *see also* "Six Sigma," http://en.wikipedia.org/wiki/Six_Sigma.
[6] *See* Mary Beth Chrissis et al., CMMI: GUIDELINES FOR PROCESS INTEGRATION AND PRODUCT IMPROVEMENT (2d. ed. 2006).
[7] *See* M. Imia, KAIZEN: THE KEY TO JAPAN'S COMPETITIVE SUCCESS (1986); *see also* "Continuous Improvement," http://en.wikipedia.org/wiki/Continuous_improvement; G. Taguchi, INTRODUCTION TO QUALITY ENGINEERING (1986); *see generally,* William Truscott, SIX SIGMA: CONTINUAL IMPROVEMENT FOR BUSINESSES (2003) (comparatively summarizing many of the above "quality" methods).

Thus, the identification and use of best practices in collection, review and production are essential. Lawyers will always be free to decide how they choose to practice law; the market will, however, decide who the winners and losers are. Winning in e-discovery increasingly means adopting lean, efficient business practices. These practices include (but are not limited to) using project management and appropriate measures of quality to reduce costs and to mitigate risk.

Of course, the reasonableness of a party's discovery process must be evaluated on a case-by-case basis in the context of the value and importance of the matters in dispute, and no single practice, process or quality-checking measure should be assumed to be appropriate in any and all circumstances.

The discussion in this Commentary is based on the following guiding general principles:

Principle 1. In cases involving ESI of increasing scope and complexity, the attorney in charge should utilize project management and exercise leadership to ensure that a reasonable process has been followed by his or her legal team to locate responsive material.

The discovery phase of litigation is best conducted under the direction of the active leadership of an attorney, acting individually or as Team Leader,[8] who is responsible for overseeing the full e-discovery process using project management and other skills and techniques. This individual or the team he or she leads should have sufficient experience in the various phases of e-discovery to effectively execute the management duties. Realistically, of course, it may be necessary to delegate the responsibilities for various phases of the process, but care must be taken to obtain regular status updates, maintain frequent contact with the team at all levels, and ensure the effective and appropriate dissemination of information to and from team members.

Principle 2. Parties should employ reasonable forms or measures of quality at appropriate points in the e-discovery process, consistent with the needs of the case and their legal and ethical responsibilities.

A producing party must make a "reasonably diligent search for e-mails and other electronic documents"[9] sought in discovery, and parties are required to work cooperatively to formulate discovery plans which are embodied in pre-trial discovery orders.[10] These processes can be enhanced by applying reasonable measures of quality such as using various forms of sampling at different phases of the process; using independent testing to report whether results can be replicated and confirmed; adopting reconciliation measures for different phases of the e-discovery process; and employing inspection to verify and report whether discrepancies were noted. The quality measures utilized should be adequately documented, by individuals qualified to do so, for later use in support of the process that has been employed.

Federal Rule of Civil Procedure 26(g)(1), which requires certification of accuracy and good faith in requesting and responding to discovery, necessitates a form of quality assurance by counsel based on an appropriate level of attention paid to ensuring accurate results. This is especially true given the exponential increases in the volumes and sources of ESI in the average case, and the new discovery tools and processes that rely on automated means of collecting, filtering, searching, and reviewing massive amounts of potential evidence in the form of ESI. As discussed below, reasonable project management often entails using various forms or measures of quality at different phases of the process.

Principle 3. Implementing a well thought out e-discovery "process" should seek to enhance the overall quality of the production in the form of: (a) reducing the time from request to response; (b) reducing cost; and (c) improving the accuracy and completeness of responses to requests.

The type of quality process that this Commentary endorses is one aimed at adding value while lowering cost and effort. A well-defined discovery process will include such measures as employing good project management practices that tailor the process to the specific case circumstances; using iterative and adaptive processes that allow for learning and correction, and, where appropriate, making use of statistically valid metrics in order to monitor progress and obtain valid measures of the accuracy of the effort.

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[8] *See* discussion, *infra at* Part II.A.2.
[9] *Wingnut Films v. Katja Motion Pictures Corp.*, 2007 WL 2758571, at *5 (C.D. Cal. Sept 18. 2007).
[10] *Board of Regents of Univ. of Neb. v. BASF Corp.,* 2007 WL 3342423, at *5 (D. Neb. Nov. 5, 2007) (emphasizing the duty to cooperatively plan discovery and affirmatively certify accuracy and good faith as part of an "open discovery process").

Principle 4. Practicing cooperation and striving for greater transparency within the adversary paradigm are key ingredients to obtaining a better quality outcome in e-discovery. Parties should confer early in discovery, including, where appropriate, exchanging information on any quality measures which may be used.

Transparency and mutual cooperation between and among parties in the discovery process will contribute significantly to ensuring quality, maintaining best practices, and reducing claims of spoliation in complex e-discovery. The discovery phase should no longer be a place for extended argument and advocacy. Rather, discovery should be viewed as an opportunity for cooperation and transparency, in the spirit of Federal Rule of Civil Procedure 1.[11] The appropriate time for advocacy and argument arrives once discovery is completed — not before. *See The Sedona Conference® Cooperation Proclamation* (2008) (promoting "open and forthright information sharing, dialogue (internal and external), training, and development of practical tools"). It is a fundamental mission of *The Sedona Conference*® to persuade requesting and producing parties that collaboration and dialogue on matters concerning ESI are appropriate, if not necessary.

The meet-and-confer "conference" is best viewed as a *process*. It should start as early as practicable and should extend through the entire discovery lifecycle — identification, preservation, collection, search, review, and production — including discussions, where appropriate, on which search and review processes or technologies will be used, and what quality steps will be taken to ensure that these tools have accurately captured responsive documents. The thrust of the recent amendments to the Federal Rules of Civil Procedure has been open and forthright sharing of information by all parties and "removing contentiousness as much as practicable."[12]

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[11] Fed. R. Civ. P. 1 (providing that the rules governing procedures in civil actions "should be construed and administered to secure the just, speedy, and inexpensive determination of every action and proceeding").

[12] *Board of Regents,* 2007 WL 3342423, at *5.

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I. Introduction

"For the rational study of the law the black letter man may be the man of the present, but the man of the future is the man of statistics and the master of economics."

— Oliver Wendell Holmes, *The Path of the Law* (1897)

Oliver Wendell Holmes was right, in ways he could not have imagined over a hundred years ago. Nearly a decade into the 21st Century, the legal profession faces the challenge of an exponentially increasing avalanche of electronically stored information with all of its attendant complexity.[13] As recently characterized by one federal district court judge, "With the rapid and sweeping advent of electronic discovery, the litigation landscape has been radically altered in terms of scope, mechanism, cost, and perplexity. This landscape may be littered with more casualties than successes . . . ." *PSEG Power N.Y., Inc. v. Alberici Constructors, Inc.*[14] Continuing to practice law in a manner divorced from what constitutes best practices drawn from other disciplines, and without concern for measures of "quality," will increasingly end up as a recipe for failure.

Not surprisingly, the case law,[15] industry literature[16] and law firms seeking a "comparative advantage"[17] have increasingly emphasized the quality measures to be undertaken during e-discovery. In *Victor Stanley v. Creative Pipe*,[18] for example, one of the reasons a party failed to carry its burden of excusing inadvertent production of privileged documents was a lack of demonstration of, *inter alia*, "quality-assurance testing."[19]

Our discussion of the role of quality builds upon Principle 11 of the Sedona Principles:

A responding party may satisfy its good faith obligation to preserve and produce relevant electronically stored information by using electronic tools and processes, such as data sampling, searching, or the use of selection criteria, to identify data reasonably likely to contain relevant information.[20]

The Commentary to Sedona Principle 11 notes that:

Depending on the nature of the sources of data, both manual and automated procedures for collection may be appropriate in particular situations. Whether manual or automated, the procedures must be directed by legal counsel to assure compliance with discovery obligations. . . . *Regardless of the method chosen, consistency across the production can help ensure that responsive documents have been produced as appropriate.*[21] (Emphasis added.)

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[13] *See* George L. Paul & Jason R. Baron, *Information Inflation: Can The Legal System Adapt?*, 13 RICH. J.L. & TECH. 10 (2007), http://law.richmond.edu/jolt/v13i3/ article10.pdf.

[14] 2007 WL 2687670, at *1 (N.D.N.Y. Sept. 7, 2007).

[15] *See William A. Gross Construction Associates, Inc. v. American Manufacturers Mutual Insurance Co.*, 256 F.R.D. 134, 134 (S.D.N.Y. 2009) ("This Opinion should serve as a wake-up call to the Bar in this District about the need for careful thought, quality control, testing, and cooperation with opposing counsel in designing search terms or "keywords" to be used to produce emails or other electronically stored information"); *In re Seroquel Products Liability Litigation*, 244 F.R.D. 650, 662 (M.D. Fla. 2007) ("Common sense dictates that sampling and other quality assurance techniques must be employed to meet requirements of completeness" [and] [i]f [defendant] took such steps, it has not identified or validated them.").

[16] *See, e.g.*, Ashish Prasad, Kim Leffert and Shauna Fulbright-Paxton, "Cutting to the Document Review Chase," *Business Law Today* (Nov./Dec. 2008), at http://www.abanet.org/buslaw/blt/2008-11-12/prasad.shtml (highlighting need for quality control during document review); "Affordable, Reliable, Quality Assured E-Discovery Services," at http://www.bostonlit.com/services.htm (promising "an accurate and legally defensible report outlining exactly what was done with your data"); Doug Greene, "Document Review (Part 2 – Planning, Organizing and Managing)" (March 14, 2009), at http://www.ediscoveryevangelist.com/2009/03/document-review-part-2-planning.html (management section of a document review plan should include quality control procedures in place).

[17] Thomas E. Stevens and Wayne C. Matus, *Gaining a Comparative Advantage in the Process*, NAT'L L. J., Aug. 25, 2008 (suggesting use of quality-assurance techniques such as sampling to check results), reprinted at http://www.law.com/jsp/legaltechnology/ pubArticleLT.jsp?id=1202424251053.

[18] 250 F.R.D. 251 (D. Md. 2008).

[19] *Id.* at 262.

[20] *See The Sedona Principles, Second Edition: Best Practices, Recommendations & Principles for Addressing Electronic Document Production* (2007) [hereinafter *The Sedona Principles, Second Edition*], http://www.thesedonaconference.org/content/miscFiles/TSC_PRINCP_2nd_ed_607.pdf.

[21] *Id.* at 58 cmt. 11.c.

Achieving "consistency across the production" requires sound project-planning oversight and can often be enhanced by use of measurements of the quality of the outcome integrated into the overall e-discovery process. As management expert Peter Drucker once declared, "If you can't measure it, you can't manage it."[22]

The ultimate goal in discovery is to identify, collect and cull documents and ESI from a larger corporate or institutional data universe and then search for and retrieve the relevant or responsive non-privileged materials with whatever tools or methods have been made available (whether automated, human, or some combination of the two). Where appropriate, the process should incorporate some form of useful metrics to quantify the accuracy of the resulting output.

There is no single "best way" through the e-discovery maze. A Department of Justice investigation of price-fixing by executives of a publicly-traded corporation may demand that a very different form of e-discovery process be adopted than a routine commercial dispute involving formation and performance of a commercial contract. In the first case, counsel may want to review every document in the possession of these important custodians to master the issues and the facts of the case and to ensure that no "hot" documents are missed, even if it means reviewing a large amount of non-responsive material. In the second case, using automated tools to identify the potentially responsive documents (typically, for later human review prior to production), with sampling to test whether the remaining documents are non-responsive may be adequate to the task. In both examples, however, pro-active leadership will require appropriate analysis of the suitability of the methods.[23] In determining the resources to be allocated, the amount of risk of overlooking relevant or privileged material will be weighed against the advantages of automation, efficiency, and cost savings.

This Commentary is not intended to serve as a comprehensive roadmap covering all possible uses of quality measures and metrics throughout the e-discovery process. The creativity of the vendors and the bar will ensure that concrete applications of quality techniques will be advanced. Nor have we any bias towards particular methods, tools or technologies or a point of view that asserts that sampling or other types of quality measures are invariably required in every type of litigation. Indeed, the drafters believe that the solution to problems created by scale are not solved by technology *per se*, which is merely a tool, but by better use of team leader skills, project management, and quality measures.

Part II.A contains a discussion highlighting the importance of a thoughtful, well-defined e-discovery process, as well as the need for project management by an attorney in charge as team leader. Part II.B makes the case for why quality matters, and provides examples of five general measures of quality as benchmark guidance. Part II.C summarizes judicial approaches to sampling. Part III consists of *selected* examples of how quality measures may be applied in various phases of e-discovery, including data collection, review, and production. For the reader so inclined, Appendix A contains a primer on statistical sampling.

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[22] "The Coming of the New Organization," HARV. BUS. REV. (Jan.-Feb. 1988) at 70.

[23] In particular, it is crucial to make good strategic and tactical decisions about how to go about locating relevant evidence in a body of collected ESI either before or during the review process. To that end, the present Commentary dovetails, and should be read in conjunction with, *The Sedona Conference® Best Practices Commentary on the Use of Search and Information Retrieval Methods in E-Discovery ("Sedona Search Commentary")*, 8 Sedona Conf. J. 189 (2007), which more narrowly focuses on new ways of thinking about issues involving search and information retrieval.

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II. Achieving Quality Through Project Management & Better Measurement

A. THE IMPORTANCE OF PROJECT MANAGEMENT

1. The Need For a Well-Defined Process

Before embarking on any complex e-discovery project, it is important to recognize, first and foremost, the importance of the process that manages the task, whether it involves "simple" human review or application of automated tools and more sophisticated techniques. Successfully meeting the challenges posed by the large and heterogeneous document collections that are common in e-discovery requires a range of contributions – by people, by technology, by methodology, and so on. Technologically advanced tools, however 'cutting edge' they may be, will not yield a successful outcome unless their use is driven by people who understand the circumstances and requirements of the case, as guided by thoughtful and well-defined methods, and unless their results are measured for accuracy.   The first step, then, is the development of a well thought-out process in which the applicable review method can be applied.

Some of the key process elements that lay the groundwork for the effective application of technology are listed below. An effective process will usually include most, if not all of these elements.

Leadership. The process should be led by a person who will be responsible for assuring that a discovery process reflects a reasonable good-faith effort to be complete and accurate.

Tailoring. The discovery process should be tailored to the specific size, risks, needs and circumstances of the case or investigation that is the occasion for the retrieval effort.

Expertise. The effort should incorporate and draw on the appropriate range of expertise required to meet and accomplish the goals set for it in a timely and cost-effective manner.

Adaptability. The process should be iterative and adaptive, allowing for learning and course correction as the project unfolds.

Measurement. Where appropriate, elements of the process should employ metrics in order to monitor the progress of the effort and to ensure consistent quality of results.

Documentation.   The overall process should be documented to ensure coordination and communication within the discovery team and to increase the defensibility of the process.

Transparency. The selection, design, implementation, and measurement of a process should be able to be explained in a clear and comprehensive way to the relevant fact-finder, decision-maker, tribunal, or regulator, as well as to opposing counsel as may be appropriate.

2. Project Management and The Need For a Team Leader

The overall quality of any e-discovery project will be enhanced by paying increased attention to project management — a discipline popularized by Henry Gantt, with roots in a variety of fields, including construction, engineering, and defense.[24]   In a nutshell, project management "is the discipline of organizing and managing resources (e.g., people) in such a way that the project is completed within defined scope, quality, time and cost constraints."[25]   An almost universal key to the success of any project is the appointment of a project leader, whose responsibility is to:

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[24] In 1917, Henry Gantt developed the "Gantt Chart," a tool used for scheduling work (first in factories) using a standard format for the display of scheduling information.   Kathy Schwalbe, INFORMATION TECHNOLOGY PROJECT MANAGEMENT, 30 (5th ed. 2007). *See generally* "Project Management," http://en.wikipedia.org/wiki/Project_management.
[25] *See Schwalbe, supra,* n.24, at 30.

> Lead the team in figuring out what the project is (planning, scheduling, and requirements gathering), shepherding the project through design and development work (communication, decision making, and mid-game strategy), and driving the project through to completion (leadership, crisis management, and end-game strategy).[26]

Applied to the process of e-discovery, it is essential that the role of project leader be clearly and decisively vested in one or more individuals who are empowered by the client to manage the effort of counsel and service providers. This function is often filled by a designated outside counsel but may, in some cases, be handled by internal client counsel. To borrow an analogy from the construction field, the leader is the "Legal Architect." In deference to the terminology more often used in the litigation context, and the fact that a combination of expertise and talent often is required, we refer to that individual as the "lead e-discovery attorney in charge," or, most concisely, the "Team Leader."[27]

The Team Leader, working with the client and the service provider(s), will define the project's budgets, goals and objectives and develop a plan for achieving the tasks and activities that need to be performed. He or she must understand both the substantive and strategic aspects of the litigation. Where possible, the Team Leader should have experience in the various phases of e-discovery and, to the extent feasible, should balance his or her role in developing the facts of the case, interviewing witnesses, and so forth, with leadership of the team efforts in discovery.

Among other things, the Team Leader should obtain regular updates and ensure the effective and appropriate dissemination of information to team members. While it may not be practicable to talk with every team member every day, it may be necessary to have daily communication with at least some team members in order to carry out this function effectively.

Given the highly specialized nature of some e-discovery tasks, such as processing of information, the availability of competent assistance, including that of third-party vendors, is often essential.

The Team Leader, or other counsel participating in the discovery process, will typically be required by court or agency rules governing production to sign the discovery responses, an act which has consequences if the court or agency subsequently challenges the diligence and accuracy of the effort.[28] Because of the sheer volume of ESI, we are in "an age of electronic discovery when attorneys may not [be able to] physically touch and read every document within the client's custody and control,"[29] and attorneys bound by the rules must be sufficiently comfortable in making such a certification that reasonable, good-faith efforts have been made to locate and produce the responsive material called for by the document or information request. Where responsibility and accountability for different phases of the discovery process have been divided, it will be necessary for the reliance by the certifying attorney on the efforts of the team member to be "reasonable."[30] In such circumstance, it is important that the parties communicate effectively with each other to help ensure a seamless, reasonable and defensible overall process.

A more comprehensive discussion of the advantages of project management is beyond the scope of the present paper. However, as is increasingly being recognized,[31] the discipline may yet hold great promise in terms of providing lawyers exercising a leadership role with a coherent framework for managing large-scale e-discovery endeavors of all kinds.

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[26]   Scott Berkun, THE ART OF PROJECT MANAGEMENT 8 (2005).

[27]   The use of the singular here and *passim* is not intended to exclude the possibility that in certain legal contexts, one or more "lead" attorneys with clearly defined duties may end up playing a substantial role in facilitating the overall e-discovery team effort.

[28] Under Federal Rule of Civil Procedure 26(g), for example, one who signs a discovery response is deemed to have certified that, to the best of the person's knowledge, information and belief "formed after a reasonable inquiry" that the response is "complete and correct" at the time of its making and is not interposed for an improper purpose. *See Mancia v. Mayflower*, 253 F.R.D. 354, 361 (D. Md. 2008) (noting that Rule 26(g) requires "approaching the process properly in accordance with the letter and spirit of the discovery rules"); *accord, Cache La Poudre Feeds v. Land O'Lakes,* 244 F.R.D. 614, 628-630 (D. Colo. 2007) (noting that counsel is required to undertake a reasonable investigation to identify and preserve relevant materials in course of responding to discovery requests).

[29] *Qualcom, Inc. v. Broadcom Corp.,* 2008 WL 66932 at *8 (S.D. Cal. Jan. 7, 2008), *vacated in part and remanded,* 2008 WL 638108 (S.D. Cal. March 5, 2008).

[30] Where in-house counsel performs the efforts to search and produce, certifying counsel may rely "on assertions by the client and on communications with other counsel as long as that reliance is appropriate under the circumstance." Advisory Committee Note, Rule 26, Subdivision (g) (1983). *Cf. Qualcomm, supra,* n.29. One way that certifying counsel can do this is to forward the draft discovery request, response, or objection electronically to in-house counsel (and where appropriate, the relevant in-house IT representative), to facilitate review and confirmation that the submission is complete and accurate before it is served or filed.

[31]   *See, e.g.,* Jeane Thomas & Ben Hawksworth, Lessons Learned, *Master Mining: Three Views on EDD Project Management, LawFirm Inc.*(March/April 2006), http://www.lexisnexis.com/applieddiscovery/NewsEvents/PDFs/ 200604_LawFirmInc_MasterMining_EDD.pdf; Courtney Ingraffia Barton, "Project Planning: A Sample of Key Questions to Ask," *id.*

B. THE NEED TO MEASURE QUALITY IN E-DISCOVERY

The concept of quality — long an important consideration for many business processes, especially, as discussed, in manufacturing — increasingly is being applied to the e-discovery process. In the e-discovery context, the assurance of quality deals with the usefulness of the results of a given task, as measured by the likelihood that a particular tool or method has adequately and accurately collected or captured responsive documents and ESI.

What are the barriers to successful adoption of quality measures in e-discovery? For one thing, the variety and changing needs of cases have necessitated an ad hoc approach to discovery management.[32] Moreover, in many cases important parts of a process are delegated to third parties or rely upon complex processes and software managed by third parties, thus requiring reliance upon the incorporation of appropriate quality tests and measurement in those processes.[33] Finally, there is considerable confusion about how to best define and measure the quality of the outcome, in the absence of a universally acknowledged standard of acceptance. In traditional discovery, that standard has always been one of reasonableness, rather than perfection, and this Commentary is not intended as arguing to the contrary.[34]

1. Why Does Quality Matter?

Faced with uncertainty surrounding the issue, some lawyers may ask if assuring quality in electronic discovery is really that important. Sanctions aside, we believe quality is extremely important, for four principal reasons.

First, failure to employ a quality e-discovery process can result in failure to uncover or disclose key evidence. This reason is the most compelling and, potentially, the one with the greatest consequences for a party involved in a case.   A simple example: if search terms are used without quality testing, they may not find the lone exculpatory document, or the "hot" document (and its many near duplicates) that can be used to convince an opponent to settle a matter — or to convince the party itself to settle. Depending on the size and scope of the case, the implications can be expensive and far-reaching.[35]

Second, a poorly conceived or managed e-discovery process may allow privileged or confidential information to be inadvertently produced.[36] This is probably the most common concern that prompts counsel to strive to perform a resource-intensive manual review of electronic documents, with the attendant prohibitive increase in costs. For example, there are frequently aspects of collection and review that involve corporate intellectual property (IP), trade secret and otherwise confidential ESI. A quality process identifies these items and designates them for protective treatment earlier rather than later in the process.

Third, e-discovery processes that measure quality are more defensible because they provide metrics and, if properly implemented, allow for course corrections. Measuring the quality of discovery processes as they occur, or reasonably soon thereafter, allows the attorney(s) functioning as Team Leader to determine if the discovery processes are working in the manner intended, or if there is a systemic or systematic error that is biasing or corrupting the results, and that necessitates some kind of modification.

Fourth, poor quality can also cost a party more money in the long run if deficiencies are noted in the documents produced, motion practice ensues and, if in the end e-discovery must be redone. The fact is that, although higher quality historically came at a higher cost, that is not necessarily the case today. It is often less expensive to engineer quality into the process than to add it on after the fact. Today, many quality programs require that the process implemented must measure, track, and report the savings that will be realized from the application of that process.

These points raise a related issue that the parties involved in e-discovery should know: the distinction between quality control and quality assurance.

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[32] Litigation projects involving custom specifications defined by the user, while highly configurable and flexible, lead to a non-standardized approach that does not lend itself to repeatability and inherent engineered quality.

[33] See Rachel Ford, *Quality Assurance and Quality Control Take Center Stage*, http://www.lexisnexis.com/AppliedDiscovery/ clientResources/spotlight4.asp (discussing performance speed, usability, security, data validation, compatibility and regression testing as quality features of systems used).

[34] While the reasonable standard is not a bright-line rule and lends itself to ambiguity, confusion and, at times, disputes, it also is a standard that is easily adaptable to the numerous different discovery contexts and cases.

[35] *See, e.g.,Qualcomm, supra,* n.29.

[36] *See, Victor Stanley, supra,* n.18.

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Quality control involves engineering quality into the actual process. It reflects the procedural safeguards that are built into the process to ensure high quality throughout, and it takes place while people are conducting specific tasks. For example, if someone is moving 10 items from point A to point B, the quality control step in that process would be to count the items before the move and after the move to ensure that all of the items were transferred (i.e., a "reconciliation"). This Commentary suggests that quality control should be built in to the e-discovery process.

Quality assurance, on the other hand, typically takes place after the process is complete; where one must make an assertion as to what was done, how well it was done, and whether the output met a certain predetermined standard. Quality assurance generally refers to the procedures designed to serve as the basis for certifications and reliance. Because quality assurance generally involves an intensive third-party audit of process and activities, it can be much more intensive and expensive — particularly in a large, complex e-discovery process. For many e-discovery projects, a full-scale quality assurance process may not be practical or financially feasible, and thus would be unwarranted.

Five principal measures of quality are especially useful in regard to e-discovery.

2. Five Measures of Quality

a. Judgmental Sampling

Accountants typically use a form of judgmental sampling as a form of quality control to find material misstatements where there are many similar financial transactions, greatly reducing the cost of the audit while maintaining its integrity. A typical example is accounts payable, where a large number of invoices pass through and are subjected to the same procedures, thus allowing representative samples to be drawn.[37]

What can be described as "judgmental sampling" has also been used in traditional discovery.[38] Attorneys often select a few random or significant folders of electronic documents coded by a particular reviewer to determine if he or she is making the correct responsiveness calls. Upon review of the results of the judgmental sample, the more senior attorney may, based on the exercise of informed judgment, request additional samples and may require a heightened second-level review if the perceived error rate is unacceptable. A judgmental sample, unlike a statistically valid sample, does not permit one to make statements based on scientific proof about the population the sample was drawn from with statistical confidence, but can nevertheless be very helpful.[39]

This method is especially useful as a quality check on discretionary processes such as collection and review. For example, an experienced professional can review a report from the collection phase that lists evidence sources collected for each custodian, and may identify gaps in the collection (e.g., a hard drive was not collected for a particular custodian). The professional selects this and other apparent exceptions and has staff research the anomaly and perform remedial action (e.g., collect the hard drive) or annotate the collection report (e.g., note that the individual does not use a personal computer), as appropriate.[40]

The selection of keywords as search terms for responding to discovery requests is a special form of judgmental sampling based on many factors, including prior knowledge as well as educated guesses with respect to what a collection of ESI may contain.[41] There will always be some measure of informed judgment to be applied in the selection of search or filtering criteria at various phases of e-discovery. Notably, the initial results produced by human judgmental sampling can be further refined through greater use of iterative processes.[42]

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[37] Janet L. Colbert, *Audit Sampling*, INTERNAL AUDITOR (Feb. 1, 2001), at 27.
[38] The distinction between "judgmental" and "statistical" sampling is discussed in more detail in the Appendix ("Sampling 101 for the E-Discovery Lawyer").
[39] The reviewer may be aware of, and take into account, the source of the documents, the size of the populations, the types of information at issue and the degree to which the results conform to other sources of oral, written or physical testimony or evidence.
[40] Similarly, an experienced professional can review a report from the review phase that lists the documents marked or reviewed, by reviewer, per hour, or relevant documents per custodian and from a high level may be able to identify outliers or other unusual patterns.
[41] *See Sedona Search Commentary, supra* n.23, *passim.*
[42] *See G. Paul & J.Baron, Information Inflation, supra* n.13.

b. Independent testing

Third-party professionals can be retained to examine a process or approach, and to report on whether results can be replicated and confirmed. One such example might be automated or highly technical processes, such as processing, searching and production operations which have been challenged on the basis of repeatability and accuracy. Thus, a native file-processing application (i.e., software that converts files from their "native" or "proprietary" form into a generic form, such as .TIFF images, for further processing) might be tested. Such tests can help confirm (or disconfirm) the software's reported efficacy at completely extracting files from an e-mail container, accurately displaying such files for review, and completely indexing the searchable text in such files.

Currently, these "black box" technologies are often only described by what they can do — not by what they cannot do — leaving the industry in a caveat emptor situation. This is expected to change, as there have been a few widely reported deficiencies in the capability of certain native file processing technologies to completely render e-mail, extract embedded objects, search compound documents or containers, extract metadata, and the like.[43]

c. Reconciliation techniques

Reconciliation to account for the impact of a process (i.e., comparing inputs to outputs) has long been used in the fields of accounting, manufacturing and engineering, and may have some applicability to the e-discovery process. Thus, applying reconciliation to the e-discovery process might involve comparing what volumes of e-mail or ESI entered a process, what remains in a process (after, for example, de-duping), and what exits a process. This can be extremely helpful in determining whether e-mail or other files were handled correctly and in identifying gaps in the process that may have resulted in the omission or incomplete handling of files.[44]

d. Inspection to verify and report discrepancies

Inspection and observation of participants in the e-discovery process resembles the original form of quality review which was part of the apprenticeship model for training junior attorneys. Inspection is especially useful as a quality check on processes such as collection and review. The deployment of seasoned experts to inspect and observe the performance of tasks by less-experienced staff can improve quality on a project. For example: during collection, it is often advisable to have senior legal and technical participants involved in the initial custodian interviews. Experienced staff can coach less-experienced staff, as well as further define or refine the process (such as by improving the custodian interview questionnaire). During the review phase, it is equally advisable to improve quality by having a seasoned reviewer observe the review and provide guidance. This should be done on a frequent and iterative basis.

e. Statistical sampling

The concept of measuring the quality of the output of a process by sampling is not new. Acceptance sampling,[45] for example, was used by the US military 60 years ago to test the quality of bullets manufactured for use during WWII and to spot design defects and improve production.

Today, some form of acceptance sampling is used as a quality control tool by virtually every large and medium-sized manufacturing company in the world. For example, Boeing's instructions to its suppliers require that they "perform either 100% inspection or acceptance sampling for receiving inspection."[46] This can be seen as a fundamental type of quality control, which is composed of many methods, depending upon the application.

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[43] One additional method to verify systems and processes is to employ "known sample" testing, where systems and processes are applied to a known collection with defined characteristics to measure the results. This is very useful in establishing the basic scope and functionality of search systems and review protocols. In particular, this method is used in by legal service providers to test prospective reviewers against a "test folder" of already-coded documents, to establish how well the reviewers can absorb and apply a given review protocol.

[44] Reconciliations from the phases before and after native file processing are extremely complex.

[45] First introduced in the 1920's by Walter A. Shewhart, this approach is referred to as "Statistical Process Control," and uses statistical tools to observe the performance of the production line to predict significant deviations that may result in rejected products. By maximizing the efficiency of war production, William Edwards Deming popularized the use of this quality control method.

[46] The Boeing Co., Quality Assurance Manual, at D8-4890.105 (2001), http://www.boeing.com/ companyoffices/doingbiz/terms/d8-4890.105.pdf.

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Standards organizations such as the International Standards Organization ("ISO"), a network of the national standards institutes of 157 countries, have created procedures and guidelines for acceptance sampling. Statistical sampling is also required by many governmental agencies to test the quality of a given population of products.[47]

As noted, statistical sampling permits statements to be made about the population from which the sample was drawn with statistical confidence and is helpful when one wants to get as close to the truth as possible, but time and cost prohibit the testing of each item, or such testing is technically infeasible. It is a "scalable solution," one that works well regardless of the size of the sampled population.

In the e-discovery context, statistical sampling can serve as a check on the effectiveness of search terms and other automated tools in identifying responsive information and on the reviewers' ability to correctly code documents. A party could identify a statistically valid document sample that the tools or search terms did not identify as potentially responsive and review them for responsiveness. By doing so, the party can provide an estimate of the number of responsive documents appearing in the documents that were not selected for review. Based on the results of such testing, the parties can take informed actions such as modifying the search terms or applying other methods to close the gap between what was selected and what was responsive.

Statistical sampling can also be used to measure the probable error rate for a project, a key custodian's documents, or even for a specific document reviewer. An acceptable error rate can be defined, and document groups with error rates above this threshold can be re-reviewed and re-tested until the results meet or exceed the quality standard.[48]

3. When Are Quality Measures and Metrics Appropriate?

While some or all of the preceding techniques can be helpful in measuring and improving the quality of e-discovery, there is no universal consensus on when and how they should be applied or even what constitutes a quality process. Nor can one expect to simply transfer "off the shelf" industrial techniques to e-discovery.[49] That is why, to the extent practical, parties should agree at the outset on which quality-based tools and techniques, if any, should be used during each phase of e-discovery and how assertions of quality will be made and where appropriate, measured.

Because it is not practical to apply every (or any) metric to every step in every case, legal teams must prioritize and agree which quality measures get applied where, based on various factors that include, among others, the value of the claims or damages, the size and complexity of the case, and the time and resources the parties have to spend on the matter. Clients, opposing parties, courts and regulators may have a very important say in the selection of these procedures as well.

In the case of complex matters — for instance, an SEC or criminal investigation — a team may opt or be required to do judgmental sampling, independent tests, and inspections as every phase unfolds, and then do statistical sampling, reconciliations and independent testing at the end of the process because money is no object and the process must be as complete as it can be.

At the other end of the spectrum may be a very small case where the use of quality metrics likely would be light, if they were even used at all. In other words, the marginal utility of an assessment of the quality of the process must be weighed against and proportional to the burdens and costs involved and the anticipated benefits.

Some of the other types of questions to consider in assessing the appropriateness of the use of quality methods and metrics are:

- Whether and how quality measurement tools and methods will be used? Will quality measurement be made as part of a culling function, or further downstream, at the stage of relevance assessment?

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[47] For example, the U.S. Department of Agriculture uses sampling plans to test the quality of most of the products it regulates and has codified sampling requirements in Title 7, § 43 of the U.S. Code. The Internal Revenue Service allows the use of sampling estimates by taxpayers to determine amounts where other estimates are not feasible.

[48] For example, a review team has a set of documents to review for a particular custodian, say 100,000. A smaller team can then review a random sample of those documents to determine how many were incorrectly coded (either as responsive or non-responsive). The team would also decide an acceptable error rate, e.g., 5%. If the number of incorrectly coded documents for the particular custodian is above this threshold the team can review additional documents, conduct searches if there was a common error in coding (e.g., an issue missed by a number of reviewers). The team then would then perform another random sample to determine whether the error rate is now within the established, acceptable threshold.

[49] In analyzing the quality of a given review process in ferreting out "responsive" documents, one may need to factor in a scale of relevance — from technically relevant, to material, to "smoking gun"— in ways which have no direct analogy to the industrial-based processes referenced above. Indeed, most quality applications assume one is looking at independent and fairly homogenous events (i.e., events of similar or like character), with an implied inference that probability affects each item equally. This may or may not be the case in the e-discovery context, and therefore it may be important to understand notions of variance and how much variance should be tolerated coming out of a given process.

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• Who will be applying the tools and methods? Will they be applied by specialists or by non-specialists (e.g., attorneys, paralegal and/or litigation support staff)? If by the latter, consideration must be given to the transfer of case-specific knowledge to the users, to the training of the users in their effective use, and to the overall usability of the tools and methods themselves.

• How will the output be used?   Will the tools and methods be used for testing or assessment purposes only (e.g., in order to learn more about the target collection, in order to navigate more efficiently through the documents, in order to prioritize the review, and so on), or will they be used to discern what should receive further review from what should not?

4. The Need For Documenting A "Quality" Process

Employing the above measures of quality in e-discovery may be prudent, even necessary, in many settings; however, failure to adequately document the steps taken to sample, test, inspect, reconcile, or verify one's results, may affect the outcome of a particular litigation. In *United States v. O'Keefe*,[50] consistent with earlier case law,[51] the Court noted the importance of providing a court with appropriate explanations in cases where the parties have not agreed upon the use of keywords and the search task is performed unilaterally.[52]   In *Victor Stanley*, the Court found that defendants were "regrettably vague" in describing their selection of keywords as to "how they were developed, how the search was conducted; and what quality controls were employed to assess their reliability and accuracy.,"[53] Accordingly, the Court went on to hold that attorney-client privilege had been waived. Challenges in that type of situation should be explained by one qualified to do so, not merely by conclusory arguments by counsel.[54]   Documenting the process employed will also be helpful in situations where courts pro-actively encourage parties to cooperatively discuss sampling and other protocols used as part of the overall discovery plans.[55]

At the outset of any quality e-discovery process, the attorney in charge or Team Leader should set out the documentation standards and controls to be employed, so as to ensure their ultimate defensibility. He or she should act under the assumption that there will be a discovery challenge to every aspect of the process employed, and include quality measures in the overall project plan. This entails updating documentation along the way, as decisions are made, to best assure that declarations and other statements regarding the outcome of the process will be adequately supported if and when the need arises at a later time.

C. JUDICIAL APPROACHES TO SAMPLING

The Federal Rules of Civil Procedure expressly acknowledge the use of "sampling" as a means of reducing what the drafters recognized as the enormous burdens posed by the volume of ESI in litigation. For example, in connection with Rule 26(b)(2)(B), the Advisory Committee noted the affirmative role that sampling may play when assessing if "good cause" has been shown to order production. Thus, the Committee Note to the Rule provides that "[p]arties may need some focused discovery, which may include sampling of the sources, to learn more about what burdens and costs are involved in accessing the information, what the information consists of, and how valuable it is for the litigation in light of information that can be obtained by exhausting other opportunities for discovery."[56]

In the litigation context, the term "sampling" can have a number of meanings depending upon how the sample is selected and the purpose for which it is used. Thus, courts distinguish between "judgmental" sampling and "statistical" sampling, the latter of which has been traditionally used primarily in determining "adjudicative facts."[57]

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[50] 537 F. Supp. 2d 14 (D.D.C. 2008),

[51] *See Judicial Watch, Inc. v. U.S. Dep't of Justice,* 185 F. Supp. 2d 54, 64 (D.D.C. 2002) (expressing inability to determine if a search was "reasonably calculated" to recover documents where the party failed to explain keywords used).

[52] *Accord, Equity Analytics, L.L.C. v. Lundin*, 248 F.R.D. 331 (D.D.C. 2008) (involving file extensions).

[53] 250 F.R.D. at 256. *See also Walter A. Gross Construction Associates, Inc.,, supra,* n.15 (highlighting need for attention being paid to quality control in developing search terms); *Rhoads Indus., Inc. v. Bldg. Materials of Am.,* 254 F.R.D. 216, 224 (E.D. Pa. 2008) (referencing need for "proper quality assurance testing," citing to *Victor Stanley*).

[54] 250 F.R.D.at 261 n.10 (to be accomplished by "affidavits or other equivalent information from persons with the requisite qualifications and experience").

[55] *See, e.g., Columbia Pictures Indus. v. Bunnell*, 2007 WL 2080419, at *14, n.32 (C.D. Cal. May 29, 2007) (court "encourages the parties to meet and confer regarding sampling"); *Zurich American Ins. Co. v. Ace American Reins. Co.*, 2006 WL 3771090, at *2 (S.D.N.Y. Dec. 22, 2006) (court ordering parties to devise a protocol for sampling).

[56] In a different context — acknowledging the power of one party to compel a sample from another under certain circumstances not relevant here — Rule 34(a) was amended to state that "[a]ny party may serve on any other party a request to produce and permit the party making the request, or someone acting on the requestor's behalf, to inspect, copy, test, *or sample* any designated documents or electronically stored information" in the respondent's possession, custody or control, and also includes provision for entering on to the premises of the responding party "for the purpose of inspection and measuring . . . testing, *or sampling . . . ."* (emphasis added). .

[57] *Rosado v. Wyman*, 322 F. Supp. 1173, 1180 (E.D.N.Y. 1970), *aff'd*, 437 F.2d 619 (2d Cir. 1970), *aff'd*, 402 U.S. 991 (1971).

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As early as 1963, survey conclusions based on "random sampling"[58] and the application of probabilistic principles were deemed admissible in court as evidence to establish facts in dispute.[59]   Thus, statistical sampling has been routinely used in discrimination cases to assess whether discrimination has occurred.[60]   These cases draw on probability theory to determine whether the observed variations at issue may have resulted from chance, or whether they demonstrate a pattern of intentional misconduct.[61]

Most recently, in the "light cigarettes" class action litigation,[62] Judge Weinstein concluded that "[s]ampling and survey techniques are well-accepted alternatives for the trial judge facing crippling discovery and evidentiary costs" and that"[g]reater reliance on statistical methods is required by the profound evolution in our economic communication and data compilation and retrieval systems in recent decades."[63]   The court noted that the Supreme Court had recently permitted sampling as a method for the Internal Revenue Service to assess unreported tips by restaurant employees.[64]

As described below,[65] statistical sampling can help provide assurance of the accuracy of automated or other tools used to reduce the size of a given population of ESI for purposes of review.

Statistical or probabilistic sampling stands in contrast to the less formal "judgmental" sampling which is often used to facilitate the exercise of discretion by a court or by a party seeking to assess the quality of a process.   This is the context referred to in the Committee Note to Rule 26(b)(2)(B) quoted above. Courts routinely utilize samples of arbitrary size drawn from a population of potential sources to help them exercise their judgment as to the extent to which a party should restore backup tapes, and who should bear the costs of doing so. In the cases of *McPeek v. Ashcroft*[66] and *Zubulake v. UBS Warburg LLC*,[67] for example, the Courts utilized informal sampling techniques in connection with assessment of the marginal utility of investing resources in the restoration and recovery of ESI from backup tapes. Similarly, in *Quinby v. WestLB AG*,[68] the Court refused to require a producing party to absorb the full cost of restoring and searching backup tapes where a review of a sample showed that "only a small percentage of the e-mails produced are relevant."[69]

The use of keyword searches to cull or filter relevant information from massive amounts of ESI is an example of the use of judgmental sampling the effectiveness of which is subject to evaluation by testing. "For example, a producing party could apply a certain set of keywords and/or concepts to cull down a sample of the collection and then analyze the results."[70] Trial or pilot runs of combinations of words may be tested in an iterative fashion to extrapolate the effectiveness of the chosen set. In the case of *Clearone Communications v. Chiang*,[71] for example, the Court noted that an initial effort to modify conjunctive search terms was, in effect, a first step in a "sampling" process to avoid over-inclusiveness.   As noted by another court, "Common sense dictates that sampling and other quality assurance techniques must be employed to meet requirements of completeness."[72]

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[58] *See* Appx. A., *infra.*.

[59] In *Zippo Mfg Co. v. Rogers Imports, Inc.*, the plaintiff manufacturer of cigarette lighters employed three surveys of the relevant smoking population to demonstrate a likelihood of confusion among consumers in support of its claim for trademark infringement. 216 F. Supp. 670 (S.D.N.Y. 1963).   For an interesting and comprehensive discussion of court decisions involving statistical sampling, see Laurens Walker & Joan Monahan, *Sampling Evidence at the Crossroads,* 80 S. CAL. L. REV. 969 (2007)*, online version at* http://law.bepress.com/uva lwps/uva_publiclaw/art62.

[60] *See, e.g., Castaneda v. Partida*, 430 U.S. 482, 495-96 (1977); *Stewart v. General Motors Corp.*, 542 F.2d 445, 449 (7th Cir. 1976). *See also Capaci v. Katz & Besthoff, Inc.*, 711 F.2d 647, 653-57 (5th Cir. 1983).

[61] *See Ageloff v. Delta Airlines, Inc.*, 860 F.2d 379, 383-84 (11th Cir. 1988); see also *G.M. Brod & Co., Inc. v. U.S. Home Corp.*, 759 F.2d 1526, 1538-40 (11th Cir. 1988) (expert testimony established profit projections based on industry standards).

[62] *Schwab v. Philip Morris USA, Inc.*, 449 F. Supp. 2d 992, 1247 (E.D.N.Y. 2006*), rev'd on other grounds sub. nom. McLaughlin v. Am. Tobacco Co.,* 522 F.3d 215 (2d Cir. 2008).

[63] *Schwab,* 449 F. Supp. 2d at 1244-45.

[64] *See United States v. Fior D'Italia, Inc.*, 536 U.S. 238, 247-48 (2002); *see also Schwab*, 449 F. Supp. 2d at 1244.

[65] *See generally* discussion *infra,* Part III.B.2.

[66] 202 F.R.D. 31, 34-5 (D.D.C. 2001).

[67] 217 F.R.D. 309, 324 (S.D.N.Y. 2003).

[68] 245 F.R.D. 94 (S.D. N.Y. Sept. 6, 2006).

[69] The court found that the number of relevant documents was "quite low when compared to the volume of documents produced." *Id* at 109.

[70] See Mia Mazza, Emmalena K. Quesada, Ashley L. Sternberg, *In Pursuit of FRCP 1: Creative Approaches to Cutting and Shifting the Costs of Discovery of Electronically Stored Information*, 13 RICH. J. L. & TECH. 11, at [38] (2007)(when results show the use of those combinations did not except a large volume of relevant information it validates and supports their use to cull down the remainder of the collection).

[71] 2007 WL 3275300 (D. Utah Nov. 5, 2007), *modified* 2008 WL 920336 (D. Utah April 1, 2008).

[72] *In re Seroquel Prods. Liab. Litig.*, 244 F.R.D. at 622 (emphasis added).   *See also In re Vioxx Prods. Liab. Litig,* 2006 WL 1726675, at *2 (appellate court urging parties "adhering to a statistically sound protocol for sampling documents" as an aid in reducing the trial court's burden over reviewing the assertion of privilege on 30,000 documents), *on remand,* 501 F.Supp.2d 789 (E.D. La. 2007).

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III. *Applying Quality Measures in E-Discovery*

Discovery involves locating and delivering non-privileged documents and ESI responsive to non-objectionable discovery requests using a reasonable search method tailored to the needs of the case. The question for the producing party is how best to capture and properly produce this deliverable, and how and what resources need to be allocated to this project.

Each case or matter — whether a discrimination claim, patent dispute or antitrust "second request" — has its own dynamics which will shape the project plan. A series of predictable decisions will be required and each phase of discovery has quality aspects which need to be considered. A non-comprehensive list of examples drawn from select phases of the discovery process follows.

A. THE DATA COLLECTION PHASE

1. Building on Traditional Approaches to Document Collection

Until recently, lawyers well knew how to ask for and collect "documents." Key custodians would be asked to gather their hard copy documents and files into boxes, which were made available to lawyers or paralegals to review essentially each and every page for relevance and privilege reviews. This time-worn process admittedly grew more complex in large litigations, e.g., antitrust actions or products liability class actions, where tens or hundreds of thousands of boxes of documents were collected from a corporate enterprise, to be reviewed by legions of junior and contract attorneys.[73] Much the same process continues to be employed today for reviewing huge bodies of evidence that exist only in hard-copy form.

With the advent of computers, the Internet, network servers, e-mail, and the explosion in forms of ESI, the collection process has necessarily had to adapt to the rapid changes and volume considerations involved. Yet, there is still a need to understand what to ask for that would be potentially relevant, what the sources of those items might be, and what key players would best know about the relevant materials. What has materially changed is the need to engage IT and business professionals who are knowledgeable about the sources and locations of ESI within the enterprise. These are the types of persons who will be informed on the subject of what ESI is online, near-line and offline, what may be zipped or encrypted, and what may be found on backups, CDs, DVDs, virtual storage devices, servers, removable storage devices (e.g., flash drives, iPods, etc.), and archives of all kinds. Potentially all of these topics must be covered in any e-discovery process to collect or cull out that which is relevant to the particular litigation or investigation from the larger universe of ESI.

2. Applying Measures of Quality to the Data Collection Process

While there is no legal principle mandating *perfection* in the collection phase of discovery, parties do have obligations to perform discovery processes reasonably and ethically, showing appropriate professional care and judgment. Given the ad hoc nature of the process, it is not surprising that objective benchmarks, standards and regulations specific to the governing of this process do not exist. Absent these standards, how does one ensure that collection workflow is going to be successful?

Quality control processes employed prior to the review of ESI are an essential element to demonstrate the "reasonableness" of a party's discovery efforts; they also support a quality chain-of-custody process for purposes of tracking and documentation. Parties using a well-designed discovery methodology should be able to account for all of the electronic information they collect (as well as identify the ESI they did not collect), even though they may review and ultimately produce only a small portion of that information. As a general proposition, these quality control procedures have two main purposes: data accountability and anomaly detection. The complexity associated with multi-location collection from large numbers of custodians, live systems, archives and forensic images makes effective quality control processes essential. Without them, parties are more vulnerable to potential challenges related to omission of potentially relevant data, spoliation, conversion of data, or other issues arising in the later review and production phases of discovery.

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[73] *See, e.g., Transam. Computer v. IBM*, 573 F.2d 646, 648 (9th Cir. 1978) (refusing to find waiver of privilege where "unique circumstances" existed requiring production within a three-month period of approximately 17 million pages creating "monumental" problems because not "grouped or batched together").

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The collection and initial processing of ESI can be measured and managed through the gathering and reporting of key metrics. This analysis should be applied as early in the workflow as possible, helping to communicate the details about the composition of the collected ESI. Simple metrics such as how much and what type of data for each custodial source has been collected can be very helpful to the planning process.[74] This can help with early detection of potential issues such as metadata loss, encryption, corruption, unsupported or unknown file types, non-searchable ESI and other unpredictable issues. It can also help prevent unexpected cost and burden at the time of review and production, for example, by the selection of a review tool that is unable to handle the multiple languages contained in the ESI.

3. Data Collection: Best Practice Guidelines

The selection, organization and filtering of ESI through the use of a search protocol[75] is a critical element in reducing the volume of information to be collected and thus the time and cost of collection. In addition, keyword search techniques are well known and may be used for this purpose. More advanced technologies have emerged that employ complex algorithms for ESI filtering and organization and may, in some cases, be useful at the collection stage. Regardless of the technology chosen, all filtering methods require a well-defined process. Without these basic steps, the use of any filtering technology will likely result in gross over- or under-inclusion of responsive ESI. The process includes several steps:

- Understanding the composition of source ESI;
- Defining the goals of the filtering;
- Applying the filter and testing the results.

Understand the composition of the ESI targeted for filtering. There are many types of documents: some documents are handwritten, some are written in one or more languages other than English, others are compressed (e.g., zip files), encrypted or protected, and some are composed of images without searchable text such as electronic faxes or scanned paper documents. This may result in having to format, convert, translate or process documents so that they can be filtered. For example, scanned paper documents must first be run through optical character recognition (OCR) software to extract searchable text. Without a well-defined process for all file types, some files may be ignored or missed during the filtering phase of the electronic discovery workflow. Finally, the handling of handwritten documents should be separately addressed.

Defining clear goals for the filtering process. The team needs to understand the intent of the filtering – such as reduction of volume by exclusion, inclusion, organization or classification of ESI — so that the appropriate tool can be utilized, and the process is explainable.

Applying the filter and testing the outcome. The filtering process should be iterative and needs to be repeated until the desired goals are met. It is not sufficient to blindly run a filtering tool and trust that it is achieving the desired results. One must evaluate the outcome of the search, looking to identify errors in how the filter rules were set up or applied. Key metrics, such as the number of included or excluded documents by keyword or filtering criteria, can be used to evaluate the outcome. Examining the high and low number of search hits can uncover issues with how the search was constructed, the choice of terms, or even issues with the data. For example, finding zero search hits on a key term or concept may point out that a search term is spelled incorrectly or that many of the documents do not contain searchable text. On the opposite end of the spectrum, finding a term that hits on a high percent of the ESI may indicate that the term is too broad or may need to be combined with additional qualifying search terms.[76]

Maintaining Data Accountability. It is critical to maintain the identification of the original source of data at each stage of processing, such as the file location, the directory and drive mappings on hard drives, as well as the contents and file counts for each unique source for each custodian. Best practices also call for clear documentation of what was done and not done. If Internet e-mail is not processed for review, that should be documented. If a party uses forensic tools to recover deleted

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[74] For example, if a party has collected an average of 20% of ESI from several custodian sources, the custodian with only 5% of ESI collected will stand out. Creating a corporate or case level data map in the earliest assessment stages of a case gives counsel a framework to analyze and make comparisons of the collection metrics.

[75] *See Treppel v. Biovail Corp.*, 233 F.R.D. 363, 372 (S.D.N.Y. 2006) (discussing importance of a "search protocol" in assuring a "diligent search" involving a "reasonably comprehensive search strategy").

[76] Sampling can also be useful in testing the effectiveness of filters, i.e., samples can be drawn and reviewed from both the set of documents hit by a filter and from the set excluded by a filter, so as to provide evidence as to whether the filter casts too wide or too narrow a net. Sample-based testing of filters, in which all data (filtered and unfiltered) is in-scope for testing, allows for informed, iterative development, ideally leading to more effective filters.

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e-mails from a custodian's mailbox, that should be documented, including the tool used and the results. By applying a custodian-based view to the data, the party can report the total number of items from all sources applicable to each custodian (e.g., the live e-mail server, e-mail archive, hard drives, network shares, and removable media). Searching the review database for all items associated with a custodian should yield a result that matches the total number of items from the processing report.

A cornerstone of data accountability is establishing the counts of files on media before processing begins.[77] From this defined starting point, the party should make adjustments to file counts reflecting processing results for each source:

- Elimination of system files (e.g., based on the National Software Reference Library or "NSRL" filter);[78]
- Deductions for certain file types not processed (such as databases);
- Deductions for items that could not be processed (e.g., corrupt or virus-infected files, or documents created by special forms of proprietary software);
- Deductions for duplicates not processed;
- Deductions for items not selected by filters.

In addition, it is also important to note files processed but not indexed, such as encrypted files or images.

The raw data regarding the electronic information is also useful for identifying anomalies in the data collected. Investigating and resolving these anomalies and exceptions in the data can serve as an additional quality control check that may discover errors or omissions in the collection process. At a minimum, investigating anomalies may help to answer questions about the collection process that other parties or the court may have. Indexing exceptions that are not documented are of particular concern, since the items are loaded into the database and appear to be available for searching, analysis and review.[79]

Additional special issues involving e-mail conversion. Conversion of e-mail from one format to another is often necessary during the collection and processing of ESI. While processing in native format is desirable, many service providers do not natively support all e-mail formats; thus, conversion of non-supported e-mail to a supported format may be required. Given the potential for data loss or alteration (for example, loss of formatting, bold, italics, underlining, and so forth) arising as a result of such "conversions," it is prudent to ascertain the steps taken to assure a quality result.[80]

Ultimately, of course, the quality and completeness of the collection phase will be directly related to the care and planning, as well as the ability to adapt to changing needs, that are built into the protocol executed under the leadership of the Team Leader.

B. THE REVIEW AND PRODUCTION PHASES

1. Introduction

Producing parties review documents or ESI for relevance and responsiveness before they are produced, as well as to determine if any privilege or exemption is applicable.[81]

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[77] Note that file counts can, however, be misleading. Container files (e.g., PSTs) can and should be "exploded" for the purpose of fully indexing and understanding the overall data set and data profile.

[78] *See* http://www.nsrl.nist.gov/.

[79] If they are not indexed, any keyword searches performed against the data will not include those items. Therefore a review that is based at least in part on the results of keyword searches may overlook these items.

[80] Among the questions that could be asked of a service provider with regard to e-mail conversion are: (i) what e-mail formats require conversion for processing; (ii) what conversion software will be used and for what purpose was the software developed; (iii) what known limitations in the software exist, including the above-described data loss or alteration; (iv) how has the software been tested or vetted prior to selection for use, and how has the conversion process been tested or validated; (v) what is done to investigate or remediate errors; (vi) what errors are typical; (vii) does the conversion process alter date and time-values; (viii) does the conversion process preserve e-mail addresses, resolved names, entire e-mail headers, blind copies (bcc's), etc.; (ix) does the process retrieve e-mail from all containers in the mail store; (x) does the conversion process handle duplicates, e-mail threads, encrypted messages, corrupt messages, foreign languages, Rich Text (RTF) formatted e-mails, HTML formatted e-mails; and (xi) does the conversion process handle non e-mail objects (e.g., calendar entries, contacts, notes, etc.).

[81] Throughout this section, the term "privilege" is used to refer to both the attorney client privilege and the attorney work product doctrine.

Effective management of the review phase requires organization and advance planning. Thoughtful structuring of the review process and coding protocols, sufficient attention to staffing, and open communication and collaboration among attorneys, clients, and legal service providers are hallmarks of well-managed document reviews. Attention to quality control throughout the process is paramount to providing meaningful and cost-efficient results.

Traditional large-scale document reviews typically have involved a significant number of individuals of varying expertise and responsibility.   Leadership by the key individuals who manage the diverse roles and tasks in coordination with the lead e-discovery attorney or Team Leader is crucial in the following respects:

- Providing clear guidelines governing "knowledge transfer" from the trial team and senior managers to the document review team and those assisting on a particular review project. Such guidelines also ensure an adequate "knowledge transfer" from those familiar with the documents and data *back* to the trial team and senior managers;
- Developing the relevant responsiveness and privilege criteria;
- Determining search methodologies;
- Ensuring consistency to the extent possible, especially in any areas relying on human review and judgment; and
- Providing for objective quality benchmarks to measure the performance and effectiveness of the review process.

2. Using Automated Methods to Reduce the Initial Burden of Review

As discussed in connection with the collection process, and as set forth in the *Sedona Search Commentary,* there are a number of automated tools that are of great assistance in reducing the overall data universe, in at least four fundamental ways: first, by helping to identify only a portion of the universe of "collected" ESI as potentially responsive based on whatever automated search methodologies and protocols are employed; second, by de-duping (or tagging) identical or "near" identical ESI so that a particular ESI object is reviewed only once; third, by eliminating certain types of files that likely are not relevant (e.g., video and program files); and fourth, by identifying and eliminating obvious spam from the review population.[82]

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.[83] Given the huge explosion in the cost of complying with e-discovery requests, tools that reasonably and appropriately enable a party to safely and substantially reduce the amount of ESI that must be reviewed by humans should be embraced by all interested parties — plaintiffs, defendants, the courts, and government agencies.

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).   When there is a difference between the determination made by the human reviewer and the categorization method, the legal team reviews the document and decides which is correct. Adjustments are then made to the search strategy. Sometimes the differences require modifications so that a particular type of document is filtered in the future.

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[82]   *See Sedona Search Commentary, supra* n.23, at 208-211.
[83]   The magnitude of the cost reduction depends on the percentage of responsive documents in a data population, the number of different issues relevant to the data request or subpoena, and the extent to which human review is applied.

This iterative process of sampling and refinement is continued until the rate of difference between the automated methods and 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.

Another approach is a "blended review" process, combining the use of manual review by humans with automated review using software. Specifically, automated tools can help reduce the workload when manual review is required. For example, where potentially privileged documents are involved, a "privilege" vocabulary identifying attorney names can be used in conjunction with a vocabulary identifying topically relevant information. In this way, the privileged documents can be identified and then subcategorized by relevancy, allowing the manual reviewers to start with, and focus on, the most pertinent privileged documents.

Once the ESI universe has been reduced to the population of documents that will actually be reviewed, there are review tools on the market that help review teams organize and more effectively work with what still may be a considerable volume of electronic data, For example, a number of service providers offer categorization and clustering tools that pull together documents relating to identical or similar topics, so they can be reviewed together — accelerating the speed of review and ensuring better consistency in the treatment of the documents.[84] Other providers offer e-mail threading, which likewise pulls together all the related e-mails from a given e-mail chain so they can be reviewed together — as opposed to randomly dispersed throughout a document set to be reviewed by different reviewers.

Although all of these review tools are quite useful in reducing the time spent reviewing ESI, in most present-day litigation there will still be, to a greater or lesser extent, a need to manually review some portion of the population to determine responsiveness to a particular e-discovery request. Moreover, it is still common for all or some portion of the data to be reviewed a second time (i.e., by means of a different reviewer) for privilege, and/or as a quality check on the first-level review.

To the extent that automated search and retrieval methods are used for reducing the ESI data set to a more manageable size for purposes of review, a party may be called upon to demonstrate to opposing parties, courts, and government agencies, that its chosen method and tool accurately captured a reasonably sufficient number of the relevant, nonprivileged ESI in existence, and that the remaining unreviewed and unproduced ESI is irrelevant. *See also discussion, supra,* Part II.B.3.

In citing to the above *Sedona Search Commentary,* as well as to the federal government's TREC Legal Track research initiative,[85] the Court in *Victor Stanley* stated that "there is room for optimism that as search and information retrieval methodologies are studied and tested, this will result in identifying those that are most effective and least expensive to employ for a variety of ESI discovery tasks."[86]

Additionally, while case law will have to evolve in this area in terms of challenges to particular discovery processes, expertise based on experience with judgmental and iterative sampling as well as the existence of accepted statistical sampling techniques can be cited. As noted in an article summarizing legal principles related to e-discovery:

> "As with any technology, it is imperative to perform frequent, thorough checks to make sure that the searches are working, perhaps by using a sampling method. . . . The needs of the litigation at issue should dictate what technology gets used, and how, in order to strike the optimal balance possible between recall and precision. The key to defensibility is that litigants employ these search strategies as part of a reasonable, good-faith, well-documented discovery protocol. Lawyers must understand where the search technology fits into that protocol and have confidence that they have taken measures to ensure the quality of their searches (footnotes and internal quotes omitted)"[87]

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[84] *See* Ramana Venkata & Michael A. Geibelson, *Overcoming E-Discovery Challenges with New Technologies*, 30 L.A. LAWYER, June 2007, at 46, 46 ("Quality control measures, document organization, and batch tagging can significantly lower the cost of e-discovery and help satisfy client demands for finite, predictable e-discovery costs").

[85] *See http://trec-legal.umiacs.umd.edu; see also Sedona Search Commentary, supra* n.23, at 215.

[86] 250 F.R.D. at 261 n.10.

[87] M. Mazza, E. Quesada, A Sternberg, *supra n.*70, at [33] (litigants looking for a 'holy grail' in automated technology will not find it).

Thus, as noted earlier, sampling techniques can be used to establish, within a certain confidence level, that unreviewed and unproduced material in the form of ESI is likely to be irrelevant to a particular discovery request.[88]

3. "Clawbacks," Rule 502, and Reliance on Automated Methods

In addition to the tools and techniques set forth in Part III, increasingly high-volume amounts of ESI in litigation will require new and creative strategic approaches to efficiently reach closure in discovery. The "clawback" provision of amended Fed. R. Civ. P. 26(b)(5) (that allows for the return or "clawback" of inadvertently produced privileged materials), is further buttressed by the passage of Federal Rule of Evidence 502 (generally immunizing parties engaging in "clawback" from third-party challenges if their agreement is included in a court order). In light of these developments, and without employing labor-intensive manual review (except for spot checking for responsiveness and privilege), counsel may well wish to assess their client's interest in producing all potentially responsive documents gathered as the result of automated search and filtering methods.[89] That is, even with a clawback agreement in place, a party may wish to perform sufficient sampling and other quality controls to reach a level of comfort on matters of relevance and privilege. This allows the majority of documents to be produced without manual review, except where a traditional manual review will be employed over documents initially identified through automated means as withholdable on grounds of privilege. This approach substantially reduces the costs and burdens of producing and requesting parties, and ideally the pros and cons of doing so should be discussed at a "meet and confer." Adoption of this approach does not, however, obviate the need for employment of measures of quality at every stage.

4. Quality Control Guidelines for Responsiveness and Privilege

The use of quality control tools throughout the review process, involving hybrid combinations of human review and other technological methods, can provide ongoing performance statistics and resolve potential ambiguity in training and instructions. Indeed, when quality checking is combined with training, a resource-intensive review process can be made much more efficient by improving the quality of initial reviews with iterative feedback.

As in traditional document review, there are two basic approaches to quality checking first-level reviewers' coding when dealing with data or ESI. One approach is to have a second level of review performed — ideally by a senior lawyer — on some or all of the coded ESI. Another is to run statistical analyses of coded documents to check for consistency across reviewers, and then conduct a targeted second-level review where there are unexplained statistical variations.

However, as recent research[90] and common sense confirm, members of any legal team can disagree on relevance assessments of specific ESI. The standard for first-level reviewers (often contract attorneys) should therefore never be perfection, especially given that "reasonable minds" can differ on exactly what is or is not relevant to a particular request. To further enhance the quality of first-level review, guidance should be continually refined to assist the reviewers in getting at least the "easy" documents right and in coming as close as possible to the desired result on close-call documents.

Review for privilege can require an even more nuanced legal analysis and, as such, can be a more expensive review per document than review for relevance or confidentiality. Complexities include the use of e-mail strings and internal legal department communications.[91] Incorporating processes that safely minimize the number of records being reviewed for privilege will lead not only to a more efficient, cost-effective review, but also to faster turnaround for production and higher quality privilege logs. These processes might include:

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[88] The same techniques can be used to determine, within a certain confidence level, that the produced documents are in fact relevant.

[89] *See generally* Advisory Committee Note to Rule 502: "Depending upon the circumstances, a party that uses advanced analytical software applications and linguistic tools in screening for privilege and work product may be found to have taken "reasonable steps" to prevent inadvertent disclosure"; *see also Rhoads Industries, supra,* n.54 (citing to Advisory Note).

[90] Data collected from the first year of the TREC Legal Track showed substantial variance in how human subject volunteers "assess" relevance or nonrelevance in response to a hypothetical production requests under FRCP 34. *See* Jason R. Baron, David D. Lewis, & Douglas W. Oard, "TREC 2006 Legal Track Overview," *Fifteenth Text Retrieval Conference (TREC 2006) Proceedings,"* http://trec.nist.gov/pubs/trec15/papers/ LEGAL06.OVERVIEW.pdf. This result is in line with other well-known studies in the "information retrieval" literature, including those previously conducted as part of TREC.

[91] *See, e.g., Muro v. Target Corporation,* 243 F.R.D. 301 (N.D. Ill. June 7, 2007) (intermingling of non-privileged communications with privileged communications in a strand or string of e-mail); *In re Vioxx Products Liability Litigation,* 501 F.Supp.2d at 815 (adopting Special Master Report involving review of in-house lawyer communications); *Victor Stanley, Inc.,* 250 F.R.D. at 262 (failure to carry burden of excusing inadvertent production of privileged documents because of lack of demonstration of, *inter alia,* "quality-assurance testing").

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- Creating a "potentially privileged" category of documents that obtains more scrutiny from more experienced reviewers. This can involve the use of file extensions, document sources, keyword searches, metadata filters, and any internal designations of privilege. (Obvious examples of potential key words that a party may consider using include "privilege," "work product," "legal," "counsel," lawyer names, firm names, and firm domains, as well as combinations and roots of these terms.)

- Identifying structured data sources where data is never in the hands of an attorney and is not created for any litigation purpose. However, companies and counsel need to be aware that such data sources may contain information that is nonetheless prohibited from disclosure by operation of law, regulation or contract, or that is confidential or proprietary for other reasons..[92]

Quality control going forward. After the review of an initial subset of ESI has been completed and all reviewers are deemed to be performing adequately, the team should implement a quality control protocol to apply on a going-forward basis. This protocol should be adjusted to accommodate the reviewers' growing understanding and new developments in the case.

For example, the system should address the percentage of ESI checked as well as the methods for selecting ESI to be checked. It is rarely necessary for a team to review 100% of the responsive ESI population a second time; instead, sampling measures may be appropriate. To guard against inadvertent production of privileged ESI, in some reviews a 100% check is made of ESI with attorney names (and/or other terms commonly associated with privileged documents). Prudence also suggests checking 100% of the ESI in the production queue that originates from the files of custodians known to work closely with attorneys.

Consistency checking. Every discrete object in the review population should ultimately be coded as responsive or not. Accordingly, a check can be done to locate any ESI that exists in the database without this essential coding. Rather than waiting until the end of the review, this check can be done on a rolling basis as the review proceeds (e.g., at the conclusion of review for each relevant custodian). Additionally, consistency in coding across like documents is important, and measures should be adopted to ensure or increase the likelihood that duplicate or near duplicate documents are being coded in the same fashion.

Other inconsistent combinations should be identified, and the database should be regularly searched for these errors both to correct them and to determine their source so as to avoid creating more errors. Listed below are a few examples of consistency searches, but they will necessarily vary from review to review:

- ESI coded as responsive without coding for potential privilege (where known subsets of the population are in fact considered privileged);
- ESI coded as potentially privileged without coding for privilege type;
- ESI coded as non-responsive and noteworthy;
- ESI coded as non-responsive and potentially privileged.
- ESI coded as needing redacting but no redaction has been applied.[93]

Additional common practices for quality control during the review process include:

- Comparing coding among reviewers on a common subset of ESI, and providing individual or group feedback following results.

- Developing a system for *early* review and assessment before reviewers get too far into review (*e.g.*, first 100 coded ESI objects automatically get sent to second–level review team for assessment).

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[92] Where parties or their counsel are unwilling or unable to determine that a group of records are completely barren of privileged material, they may wish to consider an offer to produce these documents under a "quick peek" agreement.

[93] State-of-the-art review platforms offer support for structures such as mutually exclusive tag groups, that help enforce these consistency rules during the review process. As they evolve, they may be support for many more such structures ("if it gets this tag, it must also have this one") that make it easier for inconsistencies to be identified. Wherever possible, these should be understood and fully utilized in the design of the review.

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- Selecting a group of documents created by running a search with the reviewer's name and the targeted codes that will give a broad idea of how each reviewer is handling certain codes.

- Analyzing the daily tracking sheet data log and/or service provider software-generated statistics to identify the frequency of second-level changes to first-level reviewers' coding, and targeting areas of frequent disagreement.

- Conducting early assessment of ESI marked "privileged" to identify any misunderstandings about privilege and providing feedback.

- Conducting detailed quality review of "potentially noteworthy" ESI.

- Conducting detailed quality review of key custodians or high-level custodians (such as the CEO) to assess the need for early client feedback.

- Running tests to identify logically inconsistent coding (*e.g.*, "responsive" tag but no responsive coding category selected).

- Tracking rates of review (i.e., the time taken per reviewer), and investigating any outliers compared to peer reviewers.

- Gathering metrics on the overall review process itself, including ESI/documents reviewed per hour, "pages" per hour, sampling for congruence, and total costs.

The hosting service provider and/or litigation support project manager can aid with statistical review tracking (both for substance and pace) for all levels of review. Service providers offer different options for review tracking and can provide reports that track, among other things, the number of "pages" reviewed, the number of ESI objects coded with a particular field, the hourly average of "pages" reviewed, and the number of times second-level reviewers change the coding of a particular first-level reviewer.

At least three additional types of quality concerns may arise in connection with document review:

- *Review of data "exceptions."* It is not unusual for providers and software applications to have difficulty processing obscure, password-protected, or corrupted records in the data set. Some data may also be unreadable; characters may be scrambled or random. Service providers typically refer to such documents as "exceptions." Service providers should be able to provide "exception reports" continuously throughout the review and address those issues on an ongoing basis. Because exceptions can take considerable time to resolve, waiting until the end of the review to address these issues is a mistake because it can interfere with timely production. If the provider is not able to remedy the problem, third-party consultants may be called in to process the data with different tools. Some password-protected materials can be "cracked," and others may need to be returned to the client for input. Finally, the content of the exception data should be considered. If it can be determined from the file name or type that it is not likely to contain relevant information, a party should consider whether to inform the opposing party or government agency that the file will not be processed further.

- *ESI in foreign languages.* Another category of ESI that would be commonly set-aside during review is foreign language materials. It may be necessary to obtain translations (informal translations with Internet tools may suffice for initial review), so time should be built into the production schedule to get these materials translated, reviewed, coded, and processed for production.

- *Loose electronic media.* If certain types of media have not been made part of the primary review database (such as video or audio tapes, disks, DVDs, CDs, etc.), it is important to build time into the review schedule for review of those materials prior to the last production.

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Pre-production clean-up and additional quality control checks. Once the review of a set of documents and ESI is completed, the service provider and the team must complete pre-production tasks and conduct final quality checks to ensure that all documents are properly loaded, numbered, and labeled on the final production medium. Although many teams implement quality control measures throughout the review process, it is important to develop a plan for final quality review of the production, which could include performing an appropriate analysis to verify that all ESI coded as responsive and not privileged has been included in the productions. This review could also include checking for:

- *Inadvertent production of privileged ESI.* Ensuring that no documents marked "privileged" have been loaded onto the production media. The team may also want to run important attorney names through the pre-production set as a final check. It is important that the team verify that all redactions are properly applied in all production formats.

- *Non-responsive ESI.* Ensuring that no non-responsive data has been loaded onto the production media.

- *Inconsistent or illogical coding of ESI.* Identify all documents containing inconsistent or illogical coding (*e.g.*, the reviewer checked a responsive coding category button and also checked "non-responsive").

- *Data formats and labeling.* Confirming that all data on the production media has been loaded in the required or agreed-upon format.[94] Care should also be taken to ensure that all the documents on a disk or other production media are properly labeled, including any necessary confidentiality or FOIA designations, and that the disks or other production media themselves are also properly labeled for production.

5. Final Quality Checking at Production

While quality checking should be undertaken at each stage of the review process, a final check is appropriate prior to production:

- Each production to opposing counsel should be quality checked to ensure that no materials designated as privileged were accidentally included in the production. Quality checking can include:

    (1)   Randomly spot checking the production and re-reviewing particular records;

    (2)   Checking to ensure that the number of files being produced matches the expected number of files (i.e., doing a file count) to ensure that extra (hidden or not-hidden) files are not being included;

    (3)   Checking that the size of the files being produced is approximate to the expected size of the files to ensure that extra information is not being included;

    (4)   Re-running keyword searches over the production similar to those used in creating a "potentially privileged" category. Documents returned by the search can be reexamined to ensure they are not privileged; and

    (5)   Running data format or pattern searches over the production to find potentially un-redacted but protected personal information (e.g., ###-##-####, to look for Social Security numbers).

- Where structured data is being produced to opposing parties, samples of the set that is being produced should be reviewed in the format it is being produced to ensure that the correct number of data fields are being produced and that the fields that were redacted are not included in the production.

- To the extent possible, the legal team should organize their review in advance so that objective data (authors, recipients, dates) can be automatically populated into privilege logs. Contemporary review tools can support this process to a considerable extent, greatly simplifying the process of generating privilege logs. Such information, however, should be reviewed for accuracy and completeness.

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[94] The service provider should also check the production media to ensure that all data will be readable and that no data has become corrupted.

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Conclusion

"The future is already here – it's just not evenly distributed."[95]

The tremendous growth in the volume and complexity of ESI, and the increasing scrutiny imposed on the e-discovery process by opposing parties and the courts — which brings with it increased risk of spoliation sanctions — compel the legal profession to implement best practices to achieve greater quality in all phases of the e-discovery process, including in its collection, review and production phases. In today's legal environment, using project management, measures of quality, and statistical sampling are ways in which to adopt lean, efficient and smart business practices. Put another way: just as *Moneyball*[96] demonstrated the value of applying new statistical measures to assess baseball talent, even if running counter to "tried and true practices" based on intuition and culture, this Commentary posits that legal practice needs to incorporate the best thinking from other disciplines, even if lawyers need to learn new techniques, and even if some of the "mystique" of legal work is left behind.[97]

In the end, cost-conscious firms, corporations, and institutions of all kinds intent on best practices, as well as over-burdened judges, will demand that parties undertake new ways of thinking about how to solve discovery problems — including employing better project management and better measures of quality to achieve optimum results, as outlined here. The technical and management-orientated quality processes discussed above need to be incorporated into every trial lawyer's continuing education and daily practice. These processes also dovetail with, and support The Sedona Conference® Cooperation Proclamation — which calls for incorporation of the best thinking of "disciplines outside the law" to achieve the goal of the "just, speedy, and inexpensive" determination of every action. In the end, striving to attain a quality outcome in the conduct of litigation is consistent with the highest ethical calling of the legal profession.

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[95] William Gibson, quoted in *The Economist* (Dec. 4, 2003), *see http://en.wikipedia.org/wiki/William_Gibson.*

[96] *See* Michael Lewis, MONEYBALL: THE ART OF WINNING AN UNFAIR GAME (2003). For a good summary of the book's thesis, see http://en.wikipedia.org/wiki/Moneyball.

[97] *See also* Ian Ayres, SUPERCRUNCHERS: WHY THINKING BY NUMBERS IS THE NEW WAY TO BE SMART (Bantam Dell 2007). Ayres, a Yale Law School professor and econometrician, writes:

> We are in a historic moment of horse-versus-locomotive competition, where intuitive and experiential expertise is losing out time and time again to number crunching. In the old days many decisions were simply based on some mixture of experience and intuition. Experts were ordained because of their decades of individual trial and error experience. We could trust that they knew the best way to do things, because they'd done it hundreds of times in the past. Experiential experts had survived and thrived. If you wanted to know what to do, you'd ask the grey-hairs. Now something is changing. Business and government professionals are relying more and more on databases to guide their decisions.

For a general overview of the growing field of analytics and business intelligence, *see* Thomas H. Davenport & Jeanne G. Harris, COMPETING ON ANALYTICS: THE NEW SCIENCE OF WINNING (2007).

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Appendix A: Sampling 101 for the E-Discovery Lawyer

The basic concept of sampling certain items from a population to better understand the characteristics of the whole population is simple and straightforward. Sampling is a familiar concept that is accepted by most people, including those tasked with reviewing electronic documents for relevancy or responsiveness, and privilege. The application of sampling that people are probably most familiar with is with polling in national elections. Pollsters sample only a very, very small percentage of the voting public, but must take great care so as to ensure that the small number they are polling constitutes a genuinely representative sample of the entire population. On the basis of such a small but representative sample, the pollsters can predict:

- What percentage of voters would vote for a particular candidate;
- What the margin of error of the poll is (in statistical parlance, this is known as the "confidence interval"); and
- How certain they are that this result would hold up — within the margin of error — when applied to the population at large. This is known as the "confidence level."

But mention "statistical sampling" in most other contexts and there is such apprehension about the process and the math involved, such that, at least to date, statistical sampling is rarely used or cited in assessing the quality and consistency of the electronic document review process. Ultimately, lawyers are left in an unfortunate situation, since the document review process is very well suited to the application of statistical sampling to improve quality and reduce costs.

This section seeks to demystify the basics of statistical sampling and how explain how it can be effectively applied to a typical large electronic document review process.

Some Basic Terms

Sampling: Judgmental (Nonprobabilistic) vs. Statistical

Sampling involves the use of a subset of a population to represent the whole population. Probability sampling, or random sampling, is a sampling technique in which the probability of getting any particular sample may be calculated. "Judgmental" or "nonprobability sampling" does not meet this criterion — thus, judgmental sampling techniques *cannot* be used to infer from the sample to the general population. Any generalizations obtained from a nonprobability sample must be filtered through one's knowledge of the topic being studied. Performing nonprobability sampling is generally considered less expensive than doing probability sampling, but the results are of limited value.

Examples of nonprobability sampling include:

• Judgmental sampling: Sampling performed on a sample set that was selected based on the judgment of the person doing the sampling. For example, a researcher chooses the sample based on who or what they think would be appropriate for the study, as in conducting an isolated case study of just one group, or making any choices based on relationship proximity, not science.   A common example in the e-discovery context would be keyword searching itself, which is a more-or less informed technique universally used by lawyers and legal professionals to produce a sample slice of a given ESI universe of data, based on the *a priori* judgment of those selecting the keyword terms.

Examples of statistical sampling:

"Random Samples"

A sample is a subject chosen from a population for investigation. A random sample is one chosen by a method involving an unpredictable component. Random sampling can also refer to taking a number of independent observations from the same probability distribution, without involving any real population. A probability sample is one in which each item has a known probability of being in the sample.

The sample will usually not be completely representative of the population from which it was drawn — this random variation in the results is known as sampling error. In the case of random samples, mathematical theory is available to assess the sampling error. Thus, estimates obtained from random samples can be accompanied by measures of the uncertainty associated with the estimate. This can take the form of a standard error, or if the sample is large enough for the central limit theorem to take effect, confidence intervals may be calculated.

A simple random sample is selected so that every possible item has an equal chance of being selected from the population.

A self-weighting sample, also known as an EPSEM (Equal Probability of Selection Method) sample, is one in which every individual, or object, in the population of interest has an equal opportunity of being selected for the sample. Simple random samples are self-weighting.

"Stratified sampling" involves selecting independent samples from a number of subpopulations, group or strata within the population. Great gains in efficiency are sometimes possible from judicious stratification. An example of this would be varying the sampling percentage based on document type.

"Cluster sampling" involves selecting the sample units in groups. For example, a sample of telephone calls may be collected by first taking a collection of telephone lines and collecting all the calls on the sampled lines. The analysis of cluster samples must take into account the intra-cluster correlation which reflects the fact that units in the same cluster are likely to be more similar than two units picked at random.

Additional Common Sampling Terminology:

"Blind Sample" — a selected sample whose composition is unknown except to the person submitting it. This type of sample is used to test the validity of the measurement process.

"Acceptance Sampling" — a statistical procedure for accepting or rejecting a batch of merchandise or documents. Acceptance sampling involves determining the maximum number of defects discovered in a sample before the entire batch is rejected.

"Confidence interval" — A range that contains the true population prevalence estimate a specified percentage of the time, if repeated sampling of the population were performed. For example, a 95% confidence interval is a range that contains the true population estimate 95% of the time. A smaller range indicates an estimate that is more precise. Small sample sizes or cells with low numbers generate less precise estimates and will have wider confidence intervals.

Statistical Sampling Basics

There are three key factors that determine the reliability and precision of the inferences that can be made about a population based on a statistical sample: 1) the randomness of the sample selection; 2) the variability of the sample results; and 3) the sample size.

One expects a properly-drawn random sample to be representative of the population from which it comes, but any estimate

based on the sample will naturally differ to some extent from the corresponding measurement based on the whole population. One expresses the likely extent of difference by presenting a confidence interval, say a 95% confidence interval, around our estimated value. One will have confidence that the true value computed from the whole population would lie within our confidence interval 95% of the time. That is, if one draws samples over and over and computes estimates and intervals in the same way, one will be capturing the true value within the confidence interval 95% of the time.

The variability of the sample results affect how precise one can be in describing the true population values. This sampling variability is summarized by the quantity called the "standard error," which is used in the construction of confidence intervals. One may say "the population contains X% items, + or – Y%," when X is the estimated value and Y is its standard error. In many cases, a confidence interval stretches about two standard errors above and below the estimate.

A simple sampling example might help to illustrate these concepts more effectively. If one were to reach into a back-pack full of coins, mix them up thoroughly and then pull out a single handful of all pennies, one might naturally believe that the bag contains all pennies based on the single handful that had been directly examined. However, a confidence interval for the proportion of pennies would stretch from zero percent to some low but non-zero percent, depending on how many coins there were in the handful. The thorough mixing of the bag's contents helps to achieve the randomness of the sample selection. However, the bag might well contain, say, 2% dimes, and a handful-sized sample might happen by chance not to scoop up any of the dimes. The width of the confidence interval expresses this uncertainty.

This example is simplistic and it is easy to imagine dumping out the contents of the bag to confirm the inference based on the relatively random sample of one handful from one bag. But how sure can one really be of the remaining contents of the bag based on looking at a single handful of pennies? There would always be some doubt about the remaining contents of the bag. What if the handful of coins included several different denominations instead of all pennies? What could be said about the bag's contents then? And what if there were hundreds or thousands of bags full of coins? And what if samples taken from a number of them yielded an assortment of coins instead of all one denomination? Making an inference about the contents of all of he bags and perhaps the value of the all the coins in all the bags combined, becomes a more challenging problem, but one that has been largely solved by statistics, as long as the objective is to get a reasonable estimated value for the population and not necessarily the exact value.

The mathematical formulae used in statistical sampling provide reliable, quantifiable estimates for making statements or inferences about the population based on the sample results. And, the less variability found in the sample results, the narrower a confidence interval can be, keeping the same level of confidence. Together, the variability of the sample results and the size of the sample are the two critical determinants of how wide a 95% confidence interval will come out to be. With a larger sample, we can have a tighter interval within which we are confident of capturing the true value. But uncertainty goes down slowly with sample size. We must quadruple the size of the sample to halve the width of a confidence interval.

Since the basic concept of sampling is relatively simple why is the application of sampling in the realm of document reviews so challenging to implement? Perhaps it is because of the perceived high level of risk of getting the "wrong" answer about any single item or document in the population. Building on the previous example, it seems that the approach of dumping out all the bags and examining all their contents would lower the risk of missing a few gold coins that might not be predicted or detected by sampling from the population. When performing document reviews for a legal proceeding, the attorneys involved will typically take an analogous approach of gathering all the documents and files from selected individuals and reviewing all that contain certain search terms or keywords. This approach should lower the absolute risk of missing a "smoking gun" or "privileged" document that could dramatically affect the outcome of the matter involved.

Since sampling can typically achieve only a "reasonable" rather than an "absolute" level of confidence about the entire population, it is often considered to be unsuitable for determining whether a group of documents contains any that are privileged or responsive. Presumably, the only way to determine whether documents are privileged or responsive is to look at them all and have the reviewers identify those that are privileged or responsive. However, since the reviewers are only people and people make mistakes, it makes sense to test their work for quality and consistency.

Sampling can be a very efficient method of determining whether or not the reviewers have achieved the necessary and acceptable level of quality and consistency in their work. There are two distinct approaches to sampling to find the proportion of correctly marked documents in the population. The first involves process sampling for acceptance, based on an approach that examines or inspects documents selected from in-process batches. The second, quality control testing, is performed by selecting a random sample from the entire population. Both of these methods or approaches can in theory be applied to a document review project.

The number of items to be tested or inspected is referred to as the sample size. The overall number of sample items selected from the entire review population for quality control testing will typically be less than the sum of the individual samples drawn to test in-process review batches. However, the benefit of testing individual review batches is that the review process can be adjusted to improve quality as the review is performed, thereby increasing the likelihood that the overall population will meet the established "acceptable quality limits" when the process is completed.

Appendix B: The Sedona Conference® Working Group Series & WGS^SM Membership Program

> **"DIALOGUE DESIGNED TO MOVE THE LAW FORWARD IN A REASONED AND JUST WAY"**

The Sedona Conference® Working Group Series ("WGS^SM") represents the evolution of The Sedona Conference® from a forum for advanced dialogue to an open think-tank confronting some of the most challenging issues faced by our legal system today.

The WGS^SM begins with the same high caliber of participants as our regular season conferences. The total, active group, however, is limited to 30-35 instead of 60. Further, in lieu of finished papers being posted on the website in advance of the Conference, thought pieces and other ideas are exchanged ahead of time, and the Working Group meeting becomes the opportunity to create a set of recommendations, guidelines or other position piece designed to be of immediate benefit to the bench and bar, and to move the law forward in a reasoned and just way. Working Group output, when complete, is then put through a peer review process, including where possible critique at one of our regular season conferences, hopefully resulting in authoritative, meaningful and balanced final papers for publication and distribution.

The first Working Group was convened in October 2002, and was dedicated to the development of guidelines for electronic document retention and production. The impact of its first (draft) publication—The Sedona Principles; Best Practices Recommendations and Principles Addressing Electronic Document Production (March 2003 version)—was immediate and substantial. The Principles was cited in the Judicial Conference of the United State Advisory Committee on Civil Rules Discovery Subcommittee Report on Electronic Discovery less than a month after the publication of the "public comment" draft, and was cited in a seminal e-discovery decision of the Federal District Court in New York less than a month after that. As noted in the June 2003 issue of Pike & Fischer's Digital Discovery and E-Evidence, "The Principles...influence is already becoming evident."

The WGS^SM Membership Program was established to provide a vehicle to allow any interested jurist, attorney, academic or consultant to participate in Working Group activities. Membership provides access to advance drafts of Working Group output with the opportunity for early input, and to a Bulletin Board where reference materials are posted and current news and other matters of interest can be discussed. Members may also indicate their willingness to volunteer for special Project Team assignment, and a Member's Roster is included in Working Group publications.

We currently have active Working Groups in the areas of 1) electronic document retention and production; 2) protective orders, confidentiality, and public access; 3) the role of economics in antitrust; 4) the intersection of the patent and antitrust laws; (5) Markman hearings and claim construction; (6) international e-information disclosure and management issues; and (7) e-discovery in Canadian civil litigation. See the "Working Group Series" area of our website www.thesedonaconference.com for further details on our Working Group Series and the Membership Program.