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2009

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Originally published in the Proceedings of the 7th Australian Digital Forensics Conference, Edith Cowan University, Perth Western Australia, December 3rd 2009.
This Conference Proceeding is posted at Research Online.
http://ro.ecu.edu.au/adf/69

Qualcomm v. Broadcom: Implications for Electronic Discovery

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Abstract

Electronic discovery has been the source of difficult challenges for courts, lawyers, and litigants from the beginning. The methods, document formats, and scope of electronic discovery have all contributed to the difficulties encountered. The seminal case in the United States that underscores the nature of the difficulties and challenges facing lawyers and courts in electronic discovery is Qualcomm v. Broadcom. While the case has been cited as an example of the ethical issues facing lawyers who do not follow the rules of discovery, the lessons go well beyond ethical issues. All major common law countries, including Australia, New Zealand, United Kingdom, Canada, South Africa, and the United States have recently updated their rules of civil procedure regarding the electronic discovery process in order to facilitate the electronic discovery process. The authors offer five key lessons to be drawn from this case including the importance of efficiently managing electronic discovery, the importance of the meet-and-confer discovery conference, the importance of retaining an electronic discovery expert, the importance of being proactive in the discovery process, and recognizing the limitations of relying entirely on key word searches.

Keywords

Electronic discovery, e-discovery, Qualcomm, Broadcom, meet-and-confer, Federal Rules of Civil Procedure

INTRODUCTION AND BACKGROUND

The litigation between these two chip-making giants began on October 14, 2005 when Qualcomm filed a lawsuit against Broadcom for infringement of two of its patents known as the '104 and '767 patents when Broadcom developed and marketed the H.264 video compression standard in its chip. Broadcom countered that Qualcomm had failed to disclose its patents to the standards-setting organization, the Joint Video Team (JVT). Qualcomm repeatedly denied it had taken part in the JVT conferences, and therefore, had no obligation to reveal the existence of its patents.

The JVT was established in 2001 to develop a single "technically aligned fully interoperable industry standard for video compression technology." (Qualcomm Inc. v Broadcom Corp, 2007). Although Qualcomm is an active dues-paying member of the JVT, it denied receiving emails or taking part in setting the standard for H.264 video compression. Broadcom countered that Qualcomm had taken part in setting the standard or was at least aware of the debate without disclosing the existence of its patents prior to the JVT's release of the standard in May 2003. (Qualcomm Inc. v Broadcom Corp, 2007). Broadcom tried to prove these allegations by obtaining evidence through discovery requests directed to Qualcomm.

Qualcomm consistently denied an active role in setting the JVT standards and provided no documentation to substantiate Broadcom's claims. On January 23, 2006 Broadcom served its initial discovery demands that consisted of 88 requests, including the following:

> " all documents given to or received from a standards setting body or group that concern any standard relating to the processing of digital video signals that pertains in any way to any Qualcomm patent, including without limitation, communications, proposals, presentations, agreements, commitments, or contracts to or from such bodies... . and all documents concerning any Qualcomm membership, participation, interaction, and/or involvement in setting any standard relating to the processing of digital video signals that pertains in any way to any Qualcomm Patent. This request also covers all proposed or potential standards, whether or not actually adopted." (Qualcomm Inc. v Broadcom Corp, 2007)

These discovery requests contain no specific requirements regarding what electronic data should be searched, no suggestions of key words to search, nor any requests for the discovery to contain metadata, nor for data to be in native format. Broadcom then served a second set of discovery requests identifying the information sought with more specificity including:

All documents referring to or evidencing any participation by Qualcomm in the proceedings of the JVT, the ISO, the IEC, and/or the ITU-T; and [a]ll documents constituting, referring to, or evidencing any disclosure by any party to the JVT, the ISO, the IEC, and/or the ITU-T of any Qualcomm Patent and/or any Related Qualcomm Patent." (Qualcomm Inc. v Broadcom Corp, 2007)

Qualcomm responded as follows: "Qualcomm will produce non-privileged relevant and responsive documents describing QUALCOMM's participation in the JVT, if any, which can be located after a reasonable search."

Broadcom sought similar information through interrogatories and depositions. Qualcomm provided that "Qualcomm's investigation concerning this interrogatory is ongoing and Qualcomm reserves the right to supplement its response to this interrogatory as warranted by its investigation." (Qualcomm Inc. v Broadcom Corp, 2007) There were no supplements to the discovery until the last day of the trial. The implication of these questions and answers are that if Qualcomm had participated in 2002 or 2003 then it would have been required by the JVT to identify its patents utilized in the H.264 standard and license them royalty-free.

There is no indication that Broadcom ever attempted to find the information through third-party discovery. There is no indication that Broadcom sought the information through the JVT, which would have had information on who was involved in the process. In addition, there was no attempt to aggressively seek the information through ESI research. Along with a myriad of other electronic discovery cases, two extensively discussed cases were available as role models. The Rowe (Rowe Entertainment Inc. v. William Morris Agency, Inc., 2002) and Zubulake cases (Zubulake v. UBS Warburg, , 2004) attempted to address and resolve these issues. Yet neither party nor the judges in this Qualcomm case ever addressed the electronic discovery issues. In the Rowe case the court set forth an eight-factor balancing test for identifying responsive emails while protecting privileged documents. (Rowe Entertainment Inc. v. William Morris Agency, Inc., 2002) Zubulake refined this standard. The Rowe case and the Zubulake case were catalysts for amending the new rules of civil procedure. (Zubulake v. UBS Warburg, , 2004)

THE QUALCOMM CASE UNRAVELS

While attorney Adam Bier was preparing Qualcomm witness Viji Raveendran to testify at trial, he discovered an email addressed to "viji@qualcomm.com" welcoming her to the avc_ce mailing list. Then Bier and Raveendran searched Raveendran's laptop using the search term "avc_ce" and discovered 21 emails. These emails had not been produced nor released to Broadcom in discovery. Some of these emails were dated as early 2002.

Raveendran maintained these emails on her computer for more than four years claiming that they were sent to all members and that she did not respond to any of them. Qualcomm did not reveal them at this point because Broadcom had asked for the following: "All documents referring to or evidencing any participation in." Raveendran assured the attorneys she had not participated in the JVT and had not relied on this information, so these emails did not evidence participation. The attorneys then erased the emails and decided not to search any other computers of any other employees because again they had assurance from their clients that no one had participated in .the JVT. During Raveendran's cross examination she admitted finding 21 emails that she had received from the JVT. The jury found that Broadcom did not infringe on the '104 and '767 patents and that Broadcom's patents were valid and Qualcomm's patents were invalid. (Qualcomm Inc. v Broadcom Corp, 2007)

ETHICAL VIOLATIONS OR ATTORNEY ARROGANCE OR ATTORNEY NAIVETÉ?

This case would have ended and disappeared into the obscurity of most litigation had the court not further concluded that Qualcomm had willfully failed to disclose information requested by Broadcom. The case is known for the ethical violations of Qualcomm's attorneys. As soon as the trial ended, Qualcomm retained new attorneys and they found that Qualcomm had over two hundred thousand more pages of email and electronic documents that were relevant to this issue. (Qualcomm Inc. v Broadcom Corp, 2007)

Magistrate Judge Barbara Major further ruled that Qualcomm had intentionally withheld the documents. (Qualcomm Inc. v Broadcom Corp, 2007) The court found by clear and convincing evidence that Qualcomm's counsel engaged in misconduct by providing calculatedly misleading and false discovery responses, asserting patently false statements of fact during motion hearings, minimizing the significance of missing e-mails at trial and continuing through post-trial activity.

What makes this case extraordinary is that the court did not simply sanction the plaintiff but took the further step of sanctioning the attorneys. As a result of the failure to disclose emails, the court entered a judgment in the amount of $8,568,633.24 against the company and found that the attorneys either conspired in the effort to hide documents or chose not to investigate. (Qualcomm Inc. v Broadcom Corp, 2007)

The rule changes to the U.S. F.R.C.P. 16, 26, 33, 34, 37 and 45 on December, 2006 elevated the use of electronic discovery from a best practice to potential source malpractice for those not correctly implementing and using these rule changes. Failure to properly conduct e-discovery will lead to legal malpractice cases against law firms who fail to conduct e-discovery or fail to conduct it properly with experienced computer forensic experts. As early as 2003, Judge Loretta Preska stated that she "can't imagine how counsel who is responsible cannot seek relevant electronic information" (Dorrian, 2003)

Discovery of all kinds – electronic or otherwise – was covered by U.S. Federal Rules of Civil Procedure 26 through 37 even before the 2006 amendments. Even though the new rules were not in effect when the Qualcomm case was commenced, the existing rules covered the need for conducting adequate electronic research and discovery. The amendments took effect on December 1, 2006. These revised Federal Rules and especially rules 16, 26(a) and 26 (f) require the court and the parties to give early attention to any issues concerning electronically stored information including preservation of evidence.

Civil Procedure rule 16 (b) requires the court to enter a scheduling order early in the case and further requires the court to add provisions to the order concerning electronically stored evidence. (Federal Rules of Civil Procedure, 2006). Federal Rule 26(f) of the Rules of Civil Procedure requires the litigants to confer as soon as possible and before the first scheduling conference to discuss preservation of discoverable information and any issues relating to their discovery. Civil rule 26(b)(2)(b) states that if the electronic data is not reasonably accessible the party does not have to provide it but the court can specify conditions and format. Rule 26(a)(1)(B) requires that, during the opening stages of a case, each party disclose a copy or a description by category and location of all documents and things in the disclosing party's possession, custody or control that it may use affirmatively to support its claims or defenses. The new category of electronically stored information is added to the list by the amendment to Rule 26(a)(1). (Federal Rules of Civil Procedure, 2006)

While there are serious ethical issues for the lawyers involved in this case, there are several lessons for lawyers from this case that go well beyond the ethical issues.

LESSON ONE: EFFICIENTLY MANAGE ELECTRONIC DISCOVERY

The first lesson litigants should learn in addition to the ethical issues is the necessity of having an electronic document retention and deletion policy in effect. Qualcomm had no system to retain, to collect and to locate documents. In the United States and other common law countries there are numerous cases in which the court has sanctioned companies for not retaining relevant information and not maintaining information in a retrievable format. The Federal Rules of Civil Procedure require companies to take a proactive attitude toward e-discovery requirements long before litigation occurs.

Unlike the civil code countries, the discovery rules in most common law countries allow for obtaining any information that might lead to obtaining relevant information. Information must be in a retrievable format. (Federal Rules of Civil Procedure, 2006) Prior to the electronic age, attorneys were in charge of collecting, sorting and deciding if the document was relevant to the carefully crafted request. It was entirely proper to provide only the documents that would fit the description of the request. Discovery rules in most of the common law countries require early meeting between litigants to determine the location and type of electronic data each litigant has stored. Attorneys must determine not only where data is located and how it will be retrieved, but also what format they want to receive the data and how they want it exchanged. These decisions are beyond the capabilities of most present day attorneys. Even the attorneys who request data in native format must understand what that means and be able to argue when it is important and when it is not. (Ball, 2009) Attorneys must be able to understand what terms like "MD5 hashing means" and their importance.

LESSON TWO: IMPORTANCE OF THE MEET-AND-CONFER CONFERENCE

If the litigants in this case had been required to have a meet-and-confer conference at the commencement of the litigation then agreements could have been made and they could have shared the responsibilities of the discovery. Digital forensic expert Craig Ball refers to Rule 26(f) "meet and confer" sessions as "two lawyers who don't trust each other negotiating matters neither understand." (Ball, Musing on Meet and Confer, 2008)

Attorneys must come to the meet-and-confer prepared to discuss the types of information technology systems in use by their client, their clients operation and storage of electronic data, the types of electronic data, the format the electronic data is stored, the expense and backup systems. In addition the attorneys must all come prepared to know what type of information they are seeking, the format they are seeking – native format, mirror images, metadata. Too many attorneys are using the meet-and-confer as a perfunctory hearing of no real importance. An example is in the Covad and Revonet the attorneys met but did not discuss the form of their e-discovery requests. Instead, the attorneys made assumptions about what the other attorney wanted. Covad assumed that they would receive the documents in electronic form because Revonet hired an electronic forensic specialist to collect the electronically stored information, and Revonet assuming that Covad wanted the documents in paper format because Covad produce 35,000 pages of e-mails in hard copy and provided it to Revonet. (Covad Communications Co. v. Revonet, Inc., 2008)

When the parties later decided they needed documents in the native format and brought motions to force discovery, John Faccola judge ordered the following:

> Finally, I would hope that my decision will have a didactic purpose. This whole controversy could have been eliminated had Covad asked for the data in native format in the first place or had Revonet asked Covad in what format it wanted the data before it presumed that it was not native. Two thousand dollars is not a bad price for the lesson that the courts have reached the limits of their patience with having to resolve electronic discovery controversies that are expensive, time consuming and so easily avoided by the lawyers' conferring with each other on such a fundamental question as the format of their productions of electronically stored information. (Covad Communications Co. v. Revonet, Inc., 2008)

Lawyers must understand the importance of this meeting and be prepared. Craig Ball suggests there should be "An hour or two of hard work should lay behind every minute of a Rule 26(f) conference." In the U.S. Federal Rules of Civil Procedure Rule 34 the party requesting discovery "may specify the form or forms in which electronically stored information is to be produced." The producing party then may object to the requested form(s) of the information and, in such case, must "state the form or forms it intends to use." Where a request does not specify a particular form, the party must produce the electronically stored information "in a form or forms in which it is ordinarily maintained or in a form or forms that are reasonably usable." (Federal Rules of Civil Procedures, 2006)

The Australian courts have taken it a step further in ASIC v McDonald, an Australian court recently disallowed key evidence from a plaintiffs' case because it had been obtained in breach of an agreed-upon search methodology. (Australian Securities and Investments Commission v Macdonald , 2008) In this case ASIC brought an action against the directors of James Hardie for producing building materials containing asbestos. The trial judge refused to allow discovery documents which had been obtained by a search of a laptop outside the parties' pre-discovery agreement. A subsequent attempt by ASIC to provide the documents obtained from a search conducted in accordance with the protocol was also refused. (Australian Securities and Investments Commission v Macdonald , 2008).

The U.S. cases that come closest to the ASIC Case of Australian are cases concerning parties objecting to the form of the discovery after they have received it. In general, courts have ordered the production of metadata when a litigant has requested it in the initial document or prior to the producing party producing documents in any format. However, courts generally deny the production of metadata if the requesting party has not requested it in its initial discovery requests. In a patent infringement case the plaintiff requested the documents in native format and the defendant produced it in TIFF format without metadata. The court ruled that the metadata was relevant and ordered its production. (Hagenbuch v 3B6 Sistemi Elettronici Industriali S.R.L, 2006) Yet in another case the court denied the production of metadata for word documents after the responding had produced the document in PDF and the initial request did not specify the format. (Autotech Techs Lt Partnership v AutomationDirect.com, 2008) The new USA Federal Rules of Civil Procedure, USA case law, and the Sedona Principles for Best Practices all illustrate that electronic discovery should be a party-driven process.

If the rules had been in affect at the beginning of the trial process with Qualcomm and Broadcom, perhaps the entire set of discovery problems could have been eliminated with a meet-and-confer conference. The parties could have revealed and agreed on the search terms. It would have also been clear that the discovery process was not a static process in which one party throws out a general request and it is the other parties' responsibility to comply.

LESSON THREE: ATTORNEYS CANNOT BE THEIR OWN DISCOVERY EXPERTS

One of the most important lessons to learn from the Qualcomm case is that attorneys are generally not experts in e-discovery and must understand when an expert is needed. Further, today when more than 90 per cent of all documents are produced electronically it is negligence for attorneys to attempt to do their own forensic searches and take a reactive role in the process rather than an active role. Litigants must demand the information they want and in the format desired. In United States v. O'Keefe case Judge Facciola held that conducting appropriate searching of electronic data was too complicated for lawyers and judges to address without the aid of expert testimony. (United States v O'Keefe, 2008) In addition, Judge Okeefe wrote that keyword search analysis is an area of e-discovery "where angels fear to tread." (United States v O'Keefe, 2008).

In Victor Stanley, Inc. v. Creative Pipe, Inc. the court made the attorneys take the process a step further and prove that the search methods they used to retrieve data were reasonable. The court demanded that the litigant detail the rationale behind the keywords chosen and the qualification of the searcher and the type of search. (Victor Stanley, Inc. v. Creative Pipe, Inc., , 2008)

The court further stated that in choosing a methodology parties should be "aware of literature describing the strengths and weaknesses of various methodologies, such as The Sedona Conference Best Practices." Then, if the search methodology is ultimately challenged, the party "should expect to support their position with affidavits or other equivalent information from persons with the requisite qualifications and experience, based on sufficient facts or data and using reliable principles or methodology." (Victor Stanley, Inc. v. Creative Pipe, Inc., , 2008)

There are better search methods than key word methods and it would be difficult for an attorney to defend this as the sole methodology used. Litigants may need to conduct concept searches or pattern recognition searches. Attorneys need to be aware that they may be required to defend the methodology they used in their search. Required proof may include providing quality assurance testing and providing measurement protocols to support their search methodology. Whatever the chosen methodology, attorneys must obtain the help needed (whether it is a linguist, computer forensic expert, or IT expert to provide the data requested and to demand the data they need.

In September 2007, Qualcomm's attorney issued an "expert declaration" (Qualcomm Inc. v Broadcom Corp, 2007) that there were no documents indicating Qualcomm's involvement in the JVT. This expert declaration was signed both by in house and outside retained attorneys for Qualcomm. Unless these attorneys have had some special training in forensics then this declaration is arrogant at best.

A forensic data discovery expert has the experience and training to help formulate discovery strategy, provide expert testimony, maintain chain-of-custody, locate evidence caches, analyze digital data, and identify data for litigation. The attorney on the case cannot provide this role because he or she cannot both try the case and testify as an expert witness.

In the Qualcomm case the data were either collected by the attorneys who relied on their clients or they allowed the employees to collect the information themselves. Attorneys must realize that they cannot be in total control of discovery or leave total responsibility up to their clients. U.S. courts have taken this a step further and found that relying on employees to self-collect relevant information is not defensible or systemized. (Wachtel v Health Net, Inc, 2006). In the Qualcomm case the court further found that "Qualcomm could not have achieved this goal without some type of assistance or deliberate ignorance from its retained attorneys." Finding no evidence that Qualcomm had told its attorneys about the withheld documents, the court surmised that outside counsel had decided not to look "in the correct locations for the correct documents," and to accept, despite warning signs that the document production was inadequate, "the unsubstantiated assurances of an important client that its search was sufficient." (Qualcomm Inc. v Broadcom Corp, 2007)

Attorneys need to use experts in this area just as they hire actuaries, appraisers and accountants. Experts can be crucial in defending the methodology chosen to locate relevant data. An expert can also help in preserving the integrity of the evidence including the chain-of-custody protocols. Experts can insure the collection of data preserves metadata associated with electronic documents. Experts can help cull and search through data to eliminate irrelevant or extra files. It will also be able to separate privileged materials for further specialized review.

In the Qualcomm case, the attorneys were certifying that they had searched and found no additional information. Attorneys would never attempt to certify information that an accountant, actuary or real estate appraiser would normally be called on to testify in court and should not attempt to testify forensically. A computer expert can

discover and recover electronic data stored in a variety of places. It includes files hidden, deleted, encrypted and password protected.

In addition, an expert can analyze the data and provide testimony. In the Qualcomm case, the attorneys claimed they could not answer the court's allegations of misconduct without their clients' consent to release attorney client information. The clients refused to release the attorney client privilege. Hiring this outside forensic expert to conduct a search of the client's electronic data would not put the attorney in a conflict with their own client.

LESSON FOUR: ATTORNEYS MUST BE PROACTIVE IN THE DISCOVERY PROCESS

Regardless of Qualcomm's deficiencies, Broadcom failure to insist on having its own expert review the electronic data of Qualcomm is malpractice today. If Broadcom had searched Qualcomm's electronic data and discovered the 40,000 plus missing electronic data, Qualcomm would have still been subject to sanctions, costs and possibly a summary judgment order. Without hiring their own experts and these documents had not surfaced the defendants could have lost the case. Attorneys and companies must be proactive in this process. Even with these new rules attorneys must advocate that they have their own expert review and make their own native copies of documents when relevant. Electronic data can tell you much more that paper documents ever could. Metadata can reveal when, where, how documents were created and in addition all changes made and any attempts to delete information. The American Bar Association reports that 46% of all legal malpractice cases are from substantive errors that include inadequate discovery. (ABA, 2008)

LESSON FIVE: KEYWORD SEARCHES HAVE LIMITS

After the trial and at Broadcom's insistence, Qualcomm did a key word search of the email archives of five Qualcomm witnesses for the following terms; "JVT" , "Joint Video Team", AVC, Advanced Video Coding," "H.264", "MPEG-4 Part 10, MPEG4 Part 10 and Gary Sullivan. After conducting these key word searches Qualcomm found 46,000 documents and over 200,000 pages of relevant information. The court found it "incredible that Qualcomm never conducted such an obvious search for key terms in the email archives of these key Qualcomm witnesses during the many months of discovery that occurred before trial since Broadcom had clearly requested all of it and more." (Qualcomm Inc. v Broadcomm Corp, August). These terms seem obvious looking in hindsight. There is no request by Broadcom of particular keywords prior to the ending days of the trial. It is clear that picking the right keywords for searches may not be as obvious as the court assumed. Key word searches are not an effective method of searching. (Best Practices Commentary on the Use on Search and Information Retrieval Methods in E-Discovery, 2007)

A study conducted by David Blair & M.E. Maron, *An Evaluation of Retrieval Effectiveness for a Full-Text Document Retrieval System* discovered that people searching others' works are very poor at guessing the right words to use in a search." (The Sedona Conference Best Practices Commentary on the Use on Search and Information Retrieval Methods in E-Discovery, 2007) In this study attorneys and paralegals were specialists in the area of subway accidents. They were asked to search through 40,000 documents and 350,000 pages in a subway accident case for relevant documents. When the search was completed, the participants were certain that they had found at least 75% of the relevant documents, but in fact, they had located only about 20% of the relevant documents. (Best Practices Commentary on the Use on Search and Information Retrieval Methods in E-Discovery, 2007)

In the Qualcomm case there is no evidence what keywords the attorney used prior to this order by the court at the end of the trial. The list of keywords provided by Broadcom after the trial produced the new documents. There is no testimony or other documentation to answer what efforts were made by the attorneys to locate relevant documents or why Broadcom didn't seek the key terms listed above for relevant searches at the beginning of the trial.

In the end there were ad hoc emails to many of Qualcomm's engineers. There was no indication if any of the engineers opened these emails, relied on them or had any communication among the group about the Qualcomm's patents and whether the patents were applicable to the H264. Further, there was no indication that there was any attempt by Qualcomm to influence the JVT to adopt standards that would be in conflict with Qualcomm's patents. It was too late to answer these questions, the damage had been done. Since Broadcom won the case and the court ruled that Qualcomm had waived its right to the patents there was no point in retrying the case to see what affect the new documents would have made.

Craig Ball, attorney and computer forensic consultant, has said the following about keyword searches: "The parties advocating their use failed to appreciate that keyword search in e-discovery is less a means to find information than it is a method to filter it — and a pretty poor one at that. Keyword search of ESI is a sampling strategy — a way to look at less than everything with some assurance that you're examining the parts most likely to hold responsive data." (Ball, 2009)

CONCLUSION

Electronic Discovery has become especially complicated when it involves more than one country. Most common law countries including Australia, Canada , New Zealand the United Kingdom have implemented new civil rules concerning electronic stored information (ESI) similar to those in of the United States. All of these common law countries require litigants and their counsel to be prepared to discuss a wide range of technical and legal issues regarding electronic discovery from the very beginning of the litigation process.

Attorneys for the litigants regardless of the common law country must come prepared not only with the understanding of their clients legal issues but also understand the client's information system, including all electronic data sources, the content of this electronic information and the ability to retrieve the documentation. In addition attorneys must also be ready from the inception of the lawsuit to know what they want and how they want it. Failure to understand electronic data sources can be fatal to the litigation of a case and can be the difference between winning and losing a case. Litigants can no longer make general shot-gun requests and the responder can no longer carefully examine the words of discovery requests and decide the wording just wasn't worded quite right for the documents at hand.

There certainly were ethical issues in the Qualcomm case. From the beginning Qualcomm failed to reveal their patents to the JVT, Qualcomm and their attorneys failed to reveal emails but this case has more lessons than just ethical lessons. Developments in database technology, records management, archiving and storage, will continually contribute to rule changes and interpretations. Legal changes struggle to stay up to date with changing technology.

The attorneys needed to accept that they now need professional help in complying with discovery. In addition with the civil rules, litigants can no longer be passive in the discovery rules. Judge Shira Scheindlin, the United States District Court Judge for the Southern District of New York who ruled in the Zubulake case stated at a 2009 New York Podcast, "We used to say there's e-discovery as if it was a subset of all discovery. But now there's no other discovery." (Scheindlin, 2009)

There is no other discovery and attorneys and courts must be understood the transformation has occurred. The Qualcomm v Broadcom case is a case study of what can go wrong. Attorneys have been forced out of their comfort zones. Attorneys are at ease searching through paper documents and providing paper documents. Part of the problem is the lack of training in electronic data search and sheer volume of electronic data. It takes training to learn about the data available, the value and purpose of metadata. Most attorneys do not understand how to find electronic data or preserve it. Attorneys must seek the help of forensic experts at the same time educate themselves in what computers and software programs can do.

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