DOAR™

Managing Your Data

A user guide for controlling huge amounts of case data efficiently and affordably.

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MANAGING YOUR DATA

Preface

Litigators across America are losing verdicts and squandering opportunities on damages. They are leaving money on the table in settlement negotiations.

This is not because they have cases that are inherently bad on the facts or the law. It is not because their adversaries are smarter, tougher or slicker.

Even those who avoid consequences this grave are often slogging uphill - with greater effort and expense than necessary and less effectiveness than possible - in every case they undertake. This is because, in the name of economy and doing things the way they have always been done, these practitioners inadvertently build a profound inefficiency into the way they approach cases, from the very ground up.

In each case, these litigators have neglected to manage data properly.

They are losing track of valuable information. Sometimes because of its sheer, overwhelming volume. Frequently, though, it is simply because it is has been classified into a "bucket" that gets overlooked at the crucial moment. Hand in hand with data overload goes a seemingly contradictory default: failure to acquire masses of additional data that will often contain case-altering gems.

These paradoxical and potentially disastrous shortfalls have solutions in common. With the proper perspective, with economical imaging and database technology and with expert assistance the information dragon can be slain and the best possible results obtained for clients and attorneys alike. The key intermediate goal in accomplishing this is to greatly increase the amount of information available while at the same time getting it all under control.

Introduction

Information in your client's possession. Articles and other public information. Pleadings and briefs. Potential discovery information held by the adversaries and third parties. Paper documents; videotaped depositions; electronic documents; databases; images and graphics.

These buckets of data typically occupy separate compartments in attorneys' minds, storage spaces and computer systems. They come to the fore in different phases and arenas of the case. Important connections and discrepancies between disparate pieces can easily fall through the cracks.

The attorney may not even be aware that a choice is available in organizing the universe of case of information: The way it has always been done probably seems like the natural order of things. The compartmentalization corresponds to actual phases of the litigation cycle, to qualitative differences in the nature of information media, to wide variations in the sourcing and admissibility of data. It once was a rational defense to information overload, the magnitude of which, of course, only mounts over time.

Now, however, meticulously holding on to every scrap of paper; classifying it for retrieval according to a traditional system; and ultimately losing track of pieces, or even whole portions of information -- litigators are starting to appreciate that this mode of operation is inefficient, often to the point of being dysfunctional.

Hardly any case is such a walkover that the lawyer can afford to have less than all the data ammunition possible at her disposal. If you do not make the effort to organize all available

information -- in such a way that it can be readily searched and cross-referenced -- you are almost invariably and unintentionally throwing away whole troves of potentially invaluable data, based upon gut feelings about how the case will develop. The terrible irony is that even having squandered these vast ranges of information, without robust and flexible automated searching, your effort to find crucial evidence still ends up like looking for the proverbial needle in a haystack.

Part 1

Advantages of adding to the data mountain

From the outset of the case, and at every point thereafter, the litigator must have an informed and global understanding of the entire case: the nature and probability of all potential causes of action and defenses, and the range of possible damages with the variables that will determine them. This requires making data planning the first priority, rather than an afterthought.

The decision to file a complaint should never be made without a firm grasp of every scrap of information helpful and harmful to the case and precisely how they fit together. Similarly, discovery should be seen as a tool whose power can be realized only when the litigator has effectively organized all the available data and so understands the unfolding case thoroughly and deeply; too often, in fact, the process unfolds backwards: Discovery is seen as the starting gun for amassing, then organizing and only then truly assimilating the case as a whole. And of course mastery of all the information can make or break any discussion of settlement.

That means compiling and combining every possible scrap of information so it does not get lost in the shuffle or shoved into the corner from one phase of the case to the next.

It includes scouring your own client's physical and computer files in at least as thorough and systematic a fashion as you attack the challenge of discovery. Attorneys routinely assume only opposition papers need to be indexed because they know their own information; but this is just as routinely wrong.

It also means searching out and integrating all publicly available information on pertinent issues. You cannot expect your opponent to hand you your case, and you do not need to find yourself dependent upon their gracious good will to do so.

Proper data management means acknowledging you cannot know in advance what information will turn out to be important - so you cannot afford to pick and choose what information to process to be accessible and searchable down the road.

It also means knowing all your case's warts long before the opposition does, so you can take all the available countermeasures. It means never being sandbagged by an apparently devastating piece of evidence that an adversary has ripped out of context; it means instead being prepared by appreciating all the circumstances surrounding that scrap, and in an infinitely better position to neutralize the attack and perhaps turn it back with even greater force.

The key: Substituting technology for labor

Only the penny-wise and pound-foolish can hang on to the customs of keeping mountains of paper in boxes and bringing in armies of help to wade through them. This represents a 16th-century approach to 21st-century data overload. It is an expensive and ineffective way to gain high-level command of case information, especially in light of rapid declines in the costs, and equally rapid rises in the functionality, of technology.

In the computer age, exploiting the available information to the fullest means (1) gathering up everything that might be remotely useful, no matter the quantity; (2) digitizing it, usually through a combination of scanning, optical character recognition (OCR), indexing, and video conversion; (3) throwing it in effect into an enormous pot, and (4) letting specialized consultants - using

database software and TIFF and PDF images - do the heavy lifting of grooming and organizing the data for ready reference as the occasion arises.

Once this is done, accessing relevant information is literally a push-button operation. A database is easily searched by name, or multiple names, or meeting. Searches can be done full-text or using predetermined fields. The identities of key players, the dynamics of crucial relationships, are readily teased out when they might well have remained buried under a ton of paper. Searches that traditionally have taken minutes or hours are literally done in seconds. Once cumbersome updates become fast and simple.

Customized applications for processing evidence can search millions of documents to retrieve only those that contain certain words -- during certain periods of time -- with unrelated data such as program and system files filtered out and redundant files "de-duplicated."

A plaintiff's attorney, for example, who uses these technology tools to attack information, should start well before filing a complaint. He can gain an invaluable 6-to-12-month jump vs. the many practitioners who await discovery to start trying to tame all the case data. By the same token, it also is never too early for a defense lawyer to master the case, with the objective of mitigating liability and damages.

When discovery eventually does arrive, an active data manager will be in a position to use the process like a scalpel to gain the precise information needed to fill known needs and holes in the case - instead of the blunderbuss that open-ended discovery too often becomes, to everyone's expense and inconvenience. Although responding parties complain the loudest about burdensome discovery, ultimately it is the proponents who bear the burden of slogging through the responses, analyzing them, and retaining and using effectively what they have learned.

Part 2

Discovering e-discovery

You will find that an enormous amount of data already exists in electronic form -- in word-processing, e-mail and databases; in your client's possession, the adversaries' and third parties. E-mail can provide especially devastating evidence, as has often been seen. This is because of the unique combination of informality and the illusion of confidentiality and transience surrounding the medium, which disarm users who may otherwise be resolutely discreet.

Electronic data still must be processed for litigation. However, the inherent nature if the information, and the fact that it resides in electronic format to begin with, make the indexing process more automated. Thus, indexing large collections of electronic data can be done more inexpensively, more quickly and more accurately than doing so for paper collections. Thus, this is a tremendous leg up over having to handle all the data on paper through scanning.

Taking advantage of the sweep and convenience of electronic data, though, requires a new mind-set for many attorneys. They have avoided electronic discovery, as if that stance could make the issue go away. They have done this to avoid provoking reciprocal demands for e-discovery, on the rationale that the alternative is too expensive. A firm might have one terabyte of storage, and a single case could require 10. This could be a real IT crisis in a legal profession sometimes prone to nightmares about technology. The result has been "gentlemen's agreements," or informal non-aggression pacts, to keep overlooking electronic data in discovery.

This practice, however, has outlived any usefulness it may once have had. Starting in the 1990s, a great deal of business data has been created only in electronic form; so those who steer clear of electronic data can no longer take any comfort in the belief that anything they have not requested in digital form will show up on paper anyway.

Trillions of e-mails a year traverse offices in the United States. E-mail naturally is playing a greater and greater role in litigation, beginning several years ago, rising to a crescendo in the U.S. v. Microsoft antitrust prosecution, and continuing, notably, with investigations of conflicts of interest at the major investment banks and in other corporate corruption cases this year.

Litigators who continued disregarding the indispensability of e-discovery have started learning the hard way, when they make their traditional requests for production of "all reports" on a subject - and they receive nothing in return because there simply are no physical reports.

Hidden gold in electronic evidence: Metadata

Even when redundant paper versions existed, and were requested and produced, they actually were less useful than the electronic copies. The latter are embedded with a buried treasure of metadata. This is information about creation of the document that can yield invaluable insights into the enterprise's workings. An electronic file offers up, in addition to its explicit content, its own life story from creation through modification to transmission. It may contain a history of drafts, rewrites, comments between collaborations, and edits. All this can be revealed by sophisticated drive imaging, data mining, and tracking software.

DOAR can give parties the best of both worlds in processing their documents: providing them the content of metadata in preparation for trial, while removing them for purposes of production to an adversary that is not entitled to them. Expert guidance is not a luxury in this context: A party cannot prudently respond to a request to turn over Outlook, Microsoft Mail or PST files by providing them en masse; there is every chance the metadata will include work product or otherwise privileged information.

Besides, in the electronic world, data are considerably less constant, more slippery, than they were in the analog universe. Litigators must try to recreate data as they were at the pertinent historical time in the case. To this end, courts usually will approve requests to query dynamic databases. This is often necessary in patent cases and situations involving high-tech companies.

Strategic Planning

More lawyers routinely request electronic evidence, especially e-mail, early in their discovery efforts. It's important to take a long-term view of the digital discovery process to ensure that the evidence is (and remains) authentic and admissible. Strategic planning typically involves the following steps:

- Send a preservation-of-evidence letter and, if necessary, obtain a protective order to preserve electronic files. An electronic file can be revised, moved, or corrupted any time work is done on a computer, whether the work involves that particular file or not.

- Notify the other party as early as possible that you intend to request electronic records, and specify the kinds of information and where the files may be located (whether on an individual's hard drive, the organization's network, backup media, an old computer stored in the warehouse basement, an executive's home laptop, etc.).

- Refine your requests by specifying, for example, key words, particular users, or relevant time periods to search for. In a large database, you may request only certain fields that relate to your case. Narrowing down the kinds of information you ask for accomplishes two things. First, it forces the other party to organize the information and limits the magnitude of materials that you will have to review. Second, it ensures that your request will not be denied because it is considered too broad.

- Request information about the party's information technology (IT) structure. How many offices does the company have, how many servers does it use, what application software does the company use, how often do they back up their data and in what format? How likely is it that multiple copies of the files you need reside across the entire network? Also, ask all company employees whom you depose about their computer usage, to get a picture of how they create, revise, save, store, and purge files.

- When you receive electronic evidence for review, first write-protect and virus-check it to maintain its integrity (and avoid contaminating your system). If you detect a virus, do not try to clean it up -- contact the party that produced it. Make working copies of all evidence to avoid altering the originals.

- Work with your EESP to review the electronic files in the most cost-effective way, avoiding duplication and irrelevancy. As you perform your review, classify and code the files you might want to use as evidence. Your EESP should help you produce a coding manual, based on the key legal and logistic issues in the case.

Dealing with the remaining

Electronic data must be collected from a variety of sources, including e-mail, desktop applications, and department and corporate databases. Besides e-mail, evidence exists in the form of postal correspondence, memos, reports and other plain text files; databases and spreadsheets, digital art and photos, medical records, tax returns, Web browsing patterns, inventories, mailing lists and all the rest of the vast panoply of information that is created or stored on computers.

Previous information technologies as well as current ones may well need to be harvested. (A lawyer requesting old files may be able to shift the necessary costs of restoring old computer systems, but there is no guarantee of that.) Working with the organization's IT department will help locate all information that may be pertinent.

Since most law firms do not have the needed expertise on staff to use the available technology to best advantage, they often hire electronic evidence service providers. When choosing such a provider, it is important to make sure that the project managers who are assigned to your case are familiar with the specific type of litigation and discovery matters that are involved, so they can knowledgeably assist in analyzing discovery needs.

The provider also should be able to help develop and carry out a strategic plan for cost-effective digital discovery; collect and handle evidence so as to ensure its authenticity and accuracy, and testify to that effect; work with the legal team in a professional manner and explain the technology in plain English; and otherwise adhere to the highest professional standards. For best results, select a firm that delivers integrated litigation-support services, so discovery can be coordinated with all other evidence production, organization and presentation.

Part 3

Do not paper over the need for physical documents

Embracing e-discovery, though, definitely does not mean making a U-turn in established practices and simply dropping demands for paper. Scanning never replaces photocopying, and the PC did not quite make the typewriter extinct. The vast majority of information still exists on paper. Physical documents have their counterpart to metadata - hand-scrawled notes - and they can be equally revealing. Automatically ask for both physical and electronic versions in all information requests.

Digitally processing paper is absolutely necessary. But it also requires an investment of time and money up front. This has until recently limited its use mainly to large law firms working on large and complex cases. Documents must be gathered, scanned, coded and put through optical character recognition, so the full text is searchable.

When discovery materials are received by a qualified imaging company, a rigorous review process, involving 6 steps, must be performed.

Steps include:

- **Check In**
- **Prep**
- **Imaging**
- **QC Scan**
- **Reassembly**
- **Stat QC**

For details, see Appendix A

These processes sound prosaic and routine, but they are crucial and must be rigorous. The accuracy of the database produced is only as good as the quality control of all stages required for digitization.

Once the documents have been scanned, the images receive code designations that allow them to be catalogued in database storage. Rich text data, including PowerPoint presentations, graphics, jpgs, gifs and other formats are also incorporated into the database. Coding must assure high accuracy and guarantee a product that is compatible with the litigation software. Programming checks are conducted to ensure that every file entry is complete - that for every beginning number there is a corresponding end number, for every page scanned there is a code.

Once formatting is finished, all files are programmed into the database. DOAR programmers conduct searches of the database simulating a client review, in order to uncover misnomers, inaccuracies or items needing reclassification or normalization. This process, properly done, produces an open-format database that can be programmed to work with any litigation software.

Pay the price now - or a higher one later

But make no mistake: Notwithstanding the intricacies and expenses involved, imaging provides such enormous productivity advantages, and the technology has become so efficient, that the procedure no longer is prohibitively expensive compared to photocopying for small and mid-size firms.

It drastically reduces the cost of document production, which under standard pricing usually runs 40 to 50 cents per page. The process must be repeated, and paid for again, whenever new counsel joins the case.

Imaging also slashes the amount of storage space needed: 2 million pages can be stored on 160 CDs that will take up no more space than a single Bankers Box. Documents are easily accessed wherever you need or want to work; no longer are you chained to their location.

Images can be retrieved instantly via PC, instead of waiting for someone to find a document, pull it from storage, photocopy and deliver it. Password protection and back-up offer security greatly superior to that of physical documents.

Many users can access digital copies online at once, and CDs can be copied easily and inexpensively. Last and certainly not least, the digitization effort pre-trial also translates into ease of creation of exhibits and other supplementary aids for presentation at trial.

Part 4

Getting everything together

Even after all the processing is done, the digitized information still is isolated from data that arrived in electronic form originally. Do not leave them separate. Litigators tend to cubbyhole discovery documents and videotapes apart from e-discovery, and both separately from interrogatories and pleadings.

But people tend to remember facts and ideas, not whether their source was paper or electronic. They do not necessarily think to search several databases for a piece of information - or always bother to do so. Would you not prefer to know where all your information is, all the time, to having to figure that out before you can lay your hands on it? Merge all the information into a single database so it can all be searched at once. Focusing myopically on the initial expense of doing this obscures the much greater financial costs and case risks of trying to compensate after the fact for dispersed information.

Putting all the data together does not just reduce time searching different databases. It also makes it more likely, for instance, that disparate pieces of evidence will be correlated in ways that can be crucial to the outcome of a case.

Part 5

Going to the tape

It rediscovers information that otherwise would simply molder on the shelf. Take videotaped depositions. Many of these sit in storage, essentially forgotten. But digitize them, in a process

known as Digital Asset Management - et voila: Suddenly they are easily searched and played. This, in turn, makes them much more likely to remain in mind and to be used, sometimes to enormous effect.

Most attorneys have no television and VCR on their desks. Now the depositions can be displayed on computer, making it much more likely they actually will be reviewed; that they will be used to critique how witnesses actually appear to perform under interrogation, and not just how their cold words read; that they will be shared with co-counsel; that they will played at trial, to impeach an adverse witness in a fashion very impressive to the jury or judge. Taking this step can easily mean the difference between foregoing use of a witness at the last minute, disruptively, or realizing months ahead of time how badly she had done at deposition, and adjusting accordingly, in a timely way.

Part 6

A plea to include pleadings

Pleadings have been mentioned now and again. Electronic exchange of information between parties is fast becoming routine. Many courts have adopted e_filing, and electronic pleadings are often mandatory in large class actions.

Regardless of the size of a case, try to get the other side to agree to electronic exchange and filing of papers. In this way, all documents, supporting exhibits, case law, transcripts, exhibits, pleadings and audio/video clips can be integrated into an e-brief. Gaining acceptance with judges and attorneys alike, e-briefs contain a table of contents and table of authorities that are hyper-linked to designate pages, and footnotes are linked to pop-up windows. Stored on CD or DVD, e-briefs offer ease of delivery, a comfortable reading format and searchable content, making them the preferred way to navigate the mass of documents included and cited in traditional briefs.

But when it comes to unifying case data, are not pleadings and motions not in an entirely different category from discovery material of whatever sort, and from public-record material for that matter? Many attorneys certainly treat court papers that way. We firmly believe that this is ill advised.

DOAR'S work on behalf of Simpson Thacher & Bartlett, representing First Union/Wachovia in litigation over the acquisition of SunTrust Bank, offers a prime example. The judge requested electronic briefs. DOAR crafted briefs on CD with browser-like navigation for the judge's ease of use. All documents were hyper linked from the table of contents to the conclusion, including case law, statutes, analytical quotations, transcripts, pleadings, references to other briefs, and exhibits, including audio and video. Citations and footnotes appeared as pop-ups and TIF images linked to the body of the brief. The entire package was electronically groomed to allow for full keyword and proximity searches of all text documents. More than 75,000 pages were scanned and coded, and hundreds of hours of videotape were digitized. Yet the brief was prepared in less than five days and the reply brief in less than three. The project was worth the effort: The judge ruled in favor of First Union/Wachovia.

Much time and strategy is invested in pleadings and motions. They incorporate important factual information and arguments. Litigation goes on for years, sometimes decades. Attorneys come and go. The value of those papers is lost on new participants. Indeed, much of the value is lost on case “lifers” over time to the extent they lack total recall. We are big believers in retaining that value throughout the life span of the case, and of the virtue of all participants knowing where literally everything in the case is at all times, because it is all in the same place.

A single window for team members the world over

By the same token, you should create a single Web repository, using an extranet, for all the case data.

That way, all co-counsel and other trial team members have a single point of access, across data types, wherever any of them happens to be. They can efficiently and smoothly collaborate on strategies, share work product and stay on the same page on deadlines. The savings on avoided large-scale photocopying, shipping costs and meeting time is enormous. Last-minute changes can be made quickly and easily. Restricted access guarantees security and confidentiality. Cases can easily involve dozens of firms and hundreds of attorneys.

There simply is no other way to accommodate cost-effectively all their needs for case information. This is especially true in the common situation where a document, or single fact or statement, is needed urgently and unexpectedly but happens to sit half a world away, or what might as well be.

Conclusion

The bottom line

Data management in litigation, as you have seen, is not just a matter of applying some new technique. It actually calls for a shift in cultural attitude toward litigation. But practitioners who undertake the transformation have the benefit of marvelous technologies and experienced help to call upon, and they will find the effort involved in the shift more than worthwhile.

Appendix A

"Think outside the box" is the battle cry heard in conference rooms and meeting rooms of major corporations, law firms and advertising agencies around the country. It describes a thought process that moves beyond the known or commonplace, to the outer limits of one's imagination.

In litigation support, however, particularly during discovery, it's what's inside the box that counts.

Each piece of evidentiary material may prove critical to the outcome of a case and therefore, must be reviewed, documented, categorized and copied. Document management, which has changed dramatically with the introduction of imaging and database technology, is the basis for creating cost effective and comprehensive results during the discovery process. Benefits include: cheaper/faster reproduction of future document sets, improved ways of finding information/evidentiary combinations that might otherwise have been missed, prevention of misfiled or destroyed documents and greater portability of documents stored on CDs. Thanks to the attributes of imaging technology, the document production process has become fast and accurate. That accuracy, however, is only as good as the quality control processes in place to guarantee it.

When discovery materials are received by a qualified imaging company, a rigorous review process, involving 6 steps, must be performed. Steps include:

• Check In • Prep • Imaging • QC Scan • Reassembly • Stat QC

Check In

The check-in system for each box of discovery materials is not unlike the checklist used by NASA in readying the space shuttle. It is highly systematic and critical to the successful launch of the entire project. Each box receives a bar coded tracking number and box sheet noting the case name, date of receipt, number sequence and name of the person that initiated the check-in process. A database dedicated to tracking the progress of every facet of the project is established at this time.

Beginning with Check-in, a solid system relies on strict quality control and an information capturing procedure that is critical to returning all boxes to their original state. Once all boxes have been identified and logged into the system, the prep phase may begin.

Prep Phase

The prep phase is concerned with the physical make-up of the contents of each box. Every box is unpacked and a record, in the form of a customized slip-sheet, is created to record the use of any boundary materials such as staples, rubber bands, clips, folders and binders. The slip-sheet identifies boundary items by implementing an itemized coding system or level codes, and is then placed alongside originals to separate one document from the next. Particular attention is given to any special features of originals, such as client notations or unique characteristics that may have to be retained for future use. The first of many quality control reviews is performed at this point to ensure accuracy of slip-sheet codes. If all notations and level codes are correct, the contents of the box move to the next and last phase of preparation.

The final leg of the prep phase places originals and their accompanying slip-sheets back into the box in the exact order in which they arrived. A precise record of the contents of each box including the physical appearance of each document now exists. These records will guarantee that the contents of each box will be reassembled to look exactly as they did upon arrival at the imaging facility. The box now moves to the next step in the process: imaging.

Imaging

Experienced imaging operators pay careful attention to slip-sheets, noting details of document quality, client notations and hot keys (designation that identifies pages with special features). Each page is hand fed through a high speed, high-resolution scanner. As the document passes

through the scanner, the operator views the scanned page to validate the quality of the scan. If the document contains a client generated Bates number, this number is incorporated into the process and recorded as an image key number. These numbers become critical in the development of an accurate, dependable database used to retrieve documents quickly and easily. The use of scanning software that offers an open system is optimum here. It allows information that has been captured at scan time to be exported into any database format.

QC Scan

The dual inspection process utilizes visual examinations of the images by two individuals. One operator hand feeds the document into the scanner and visually checks the quality of the scanned document. A separate operator, at their own workstation, verifies there are no missing pages, that data were captured successfully, that proper level codes were assigned and that image keys match the Bates numbers, when applicable. These operators check for basic errors, duplicates, images tagged for re-scan, or gaps in the numbering system. This attention to detail, by two experienced operators, delivers the highest level of quality possible. Many imaging companies rely exclusively on the statistical quality control step at the end of the scanning process for their quality control. High-end vendors take quality control to a whole new level by establishing a three level quality control review (at scan time, post scan, and a statistical QC process). Sophisticated workflow systems like this achieve greater throughput and accuracy.

Reassembly

Reassembly involves replacing the boundary items onto originals exactly as they were found during the prep phase. The proper execution of the document preparation and reassembly stages ensures that you receive the documents back in the condition in which they were sent out. The added benefit of proper prep and reassembly is the ability to prepare production sets which reflect the way in which they were physically organized in compliance with state and federal rules of procedure.

Stat QC

Stat QC will actually check the results of the earlier quality control reviews creating yet another important level of control. A random selection process chooses images to see if they are 100% accurate, that their bates number matches their image key number and that the quality of the scan is satisfactory. If all pages successfully pass this procedure, the batch is accepted, a manifest report is generated, blowbacks may be printed and the batch is closed and readied for the next phase in the process: coding.

About the author: Warren A. DiDonato

Mr. DiDonato is the Director of Litigation Support and brings to DOAR experience gained from over 12 years of legal industry service, both inside and outside the law firm environment. His extensive experience spans the full life cycle of the litigation process. Currently, as Director for DOAR's Discovery Services Division, Warren calls upon his vast experience in making recommendations that streamline operations, increase efficiency, and enable DOAR to best leverage its vast resources when executing on a project. Warren is also responsible for reviewing potential business alliances within the Litigation Support Industry.

Prior to joining DOAR, Warren was a Senior Member of the Professional Staff at SRA International, Inc., a provider of systems integration and eBusiness consulting services, where he worked in the Legal Systems and Consulting Division. Warren was the lead consultant for the company's electronic discovery initiative, and also managed several large integration projects for the company's Law Firm clientele.

In his position as Director of Project Management at LIT, a national litigation services provider, Warren was responsible for the coordination of all client work performed in the Imaging, Coding and Production areas to ensure that the output adhered to company and client standards. He was also involved in planning and managing some of the largest document production projects in the country, including one which entailed the on-site imaging and coding of a 30 million-page document production.

As a Case Manager at a major New York City based law firm, Warren brought technology to bear on the traditional methods of working with large paper populations. He was directly responsible for day-to-day coordination of case activities on two of the firm's largest litigations, both in excess of several hundred million dollars. In this capacity, he served as the client liaison, responsible for interfacing with co-counsel and managing the litigation support team of over 50 people.

During his career, Warren has consulted on hundreds of large, complex litigation projects, and has specialized in the management of multi-site, multi-party, multi-vendor document productions involving the imaging, coding, retrieval and printing of large document populations. Warren is continually researching and investigating alternative methods of document management for his clients. His breath of experience includes the successful set-up and management of imaging and coding operations in various cities around the world, including Los Angeles, Chicago, Dallas, Toronto, and London.

Warren earned a B.A. from Fairfield University, where he elected and served as the President of the Student Government, and studied Economics and Politics.

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