Transaction Tools

Silviu Pitis, January 2014

This paper looks at "Transaction Tools" – technology, and software in particular, that is used and might be used by attorneys at big law firms for transactional work. It was my experience over this past summer than the technological assistance that lawyers get is underwhelming. While the core of legal work is above automation – at least for the foreseeable future – the myriad administrative and repetitive tasks that accompany legal work can for the most part be substantially reduced through technology.

This paper argues that it is possible for us (lawyers and entrepreneurs) to develop specialized and customizable utilities for completing certain legal tasks that will be adopted by the legal industry. In Part I, I look at the current state of transaction tools – at the barriers to technological adoption, the stakeholders involved in the legal process, and the consequences these factors have for technology. In Part II, I look at some of the technology currently in use and provide some analysis of its success and failure in context of the factors found in Part I. Part III looks at some specific examples of problems that could be solved through the use of technology.

I. Adoption of Technology for Transactional Work

It is my belief that the technology used to manage and perform transactional legal work has fallen behind the times, and that countless hours are wasted because lawyers lack the tools to efficiently manage and conduct their work. I felt so technologically limited from one of the very first assignments I received this past summer that I put a post-it on my wall that wrote, "legal programming language!". It was a pretty simple replacement task, but one that had I not performed, the associate I was working with would have done. Had I been proficient in any scripting language at the time (say Perl or Python), I could have easily written a script to automate 80% of the replacement, and then check it by hand afterwards (checking work is always easier than doing work), saving maybe 50% of the time I spent on the assignment. Over the course of the summer I was exposed numerous repeat situations. As such, I developed the belief that legal work does not have to be so painful: drafting, due diligence, and matter management can all be made easier through the effective application of technology.

While other industries have seen game-changing efficiency improvements over the years,[1] the legal industry has remained largely stagnant. For several reasons, described below, the power of technology has simply not been successfully leveraged in the practice of corporate law.

1 For example, the shift to quantitative analysis and algorithmic trading in financial markets; the shift to mathematics-based professional sports; and the power of just-in-time inventory systems and other sophisticated supply-chain management systems in industry.

Barriers: Why technology is lagging

1. **Complexity and lack of simple solutions**

   Probably the important reason why technology has not been leveraged is that the complexity of legal work precludes the possibility of a magical one-size-fits all, hands-off solution. Whereas a certain amount of financial trading might be automated via algorithms, designing such algorithms to process and work with language and the level of detail and diversity required by law is currently beyond our ability.[2] Thus, any individual solution will necessarily be limited in utility.

   Furthermore, the way lawyers go about their work varies dramatically even within the same firm. For example, some prefer to do everything on the computer, whereas others prefer to do a significant amount of work (e.g., marking up and reviewing documents) by hand. Thus, any individual solution will necessarily have limited appeal to lawyers as a group.

2. **Lack of technical savvy**

   Technical skills are not high on the list of lawyers' skill-sets. Nor are the few technically savvy people that law firms do employ invested in or familiar enough with legal tasks to create useful tools. Thus, whereas the finance industry, full of quants, was able to develop its own technologies, no such internal movement has been possible for law.

3. **Lack of proper incentives**

   To date, the incentives for technological change have been lacking. One of the major incentives for associates is to rack up billable hours. Once a client's business is won, the incentive for partners is also to bill time. Any improvements in efficiency generally run counter to this. For example, even if some attorneys had the technical savvy and personal incentive to create tools to aid in their work, they would be wary to share them, even inside their firm. Once shared, the creator would lose a significant part of the advantage of shorter time to task completion, as the average time to completion of a task falls.

4. **Entrenchment & the Single Platform Program**

   Even though transactional work is something that anyone could theoretically do, without a law degree and without going to law school, the players of big law are highly entrenched, and the barriers to entry are too great for entrepreneurs seeking profitable disruption. Much of this stems from the fact that law firms typically have a single document management platform and provider. Any in-house technological support is versed in that platform. Replacing that technology is nigh impossible for a new entrant, and the lack of integration support creates barriers to creating complementary products.

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2 Consider the following roughly paraphrased anecdote of Marc Cenedella, CEO of TheLadders (a online job service for six-figure plus jobs): "Several accomplished programmers told us they could automate our process of crawling job postings on various Fortune 500 company websites. We offered them a lot of money if they could do it, but not a single person was able to produce a prototype that worked even sometimes."

Stakeholder Analysis

In spite of the above barriers to the creation and adoption of new legal technology, each individual stakeholder has something to gain from innovation. Although not all stakeholder groups benefit as a whole from more efficient tools, the individual members of each group stand to benefit from taking advantage of any such offerings.[3] Furthermore, it is clear that more efficient tools would result in an overall social surplus. An analysis of each stakeholder group, when paired with the barriers discussed above, will suggest key areas in which technology can be used effectively.

1. **Clients**

   Interests: Technology can serve client objectives in four ways. First, it can provide more useful information about the legal services they are receiving. While already common, this benefit of technology will continue to improve. Second, technology can allow clients to make better decisions. For example, if clients had a better idea of how common or valuable certain contract clauses were (beyond what their lawyers tell them), they might be able to create more beneficial contracts. Third, more efficient processes mean lower costs. Finally, along those same lines, one can imagine improved channels of communication between clients and firms.

   Power: Despite the seeming lack of direct control that clients have over the technology used by their legal counsel, they can influence firm choices in two ways. First, clients can place downward price pressure with the threat of switching law firms and lowering expenditures. Thus buyer power, and the competition among law firms, might force cost cutting, which may result in technological innovation. Second, clients can demand information and require collaborative processes that might only be provided through certain technology. If clients can be sold on the advantages of such technologies, they can affect law firm choices. For example, clients presumably exercise considerable control in the selection of a datasite (e.g., Merrill Datasite) for use in certain transactions.

2. **Firms / Partners**

   Interests: Partners want two things: time and money. More money comes from more business and time comes from more efficient processes. If properly implemented, technology can serve both of these interests. If technology provides a critical competitive advantage (or, if it is widespread, competitive requirement) then partners and their firms will embrace technology, even if it means that each matter will take less time, require fewer billable hours, and result in lower revenues per engagement. Indeed, if firms can provide the same service at a lower cost to clients, that means they will collect more business, which could result in an overall rise in profits. Several partners at major law firms have already adopted this perspective on efficiency.[4] A final,

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3 For example, more efficient legal tools would lower the average billable hours per assignment, which would reduce the demand for junior associate work, and therefore hurt junior associates on the whole. However, as long as any individual junior associate had access to enough incoming work, more efficient tools would result in a better on-the-job experience and faster learning and skill development.

4 During training at our summer program it was noted more than once that task efficiency was one of the key competitive advantage the firm could offer clients, and that there was so much business to go around, that accomplishing things faster was preferred, even if it meant lower billable hours per task.

but critical, interest of the firm is security: any technology that is to be adopted must be adequately secured.

Power: Partners are the most powerful stakeholder group when it comes to influencing firms' technology choices. Given powerful competitive benefits, partners can cause their entire firm to adopt a technology. Beyond pushing for firm-wide adoption, they also have the power to veto the use of specific tools. Thus, even if a technology gains traction at the associate level, it will need to appeal to the interests of partners in order to be successful.

3. **Associates**

Interests: Associates also care about their time and money. However, with respect to time, associates care more about the quality of their work hours, rather than the quantity, as they will have to work regardless of how fast they finish their tasks.[5] The quality of their work time is inversely proportional to the amount of frustration they experience, which is driven primarily by repetitive inputs (e.g., reading similar documents and drafts, and then reviewing them in meetings), repetitive outputs and tasks, technological shortcomings (e.g., auto-formatting and lag), and administrative difficulties (including communication). All four of these factors can be improved through the use of technology.

Power: Associates have the power to manage their own work processes. This means that if a given tool is complementary, rather than supplementary, to the firm-mandated workflow, associates can choose to use it. This should be a powerful in for new technologies, as associates are most often the ones who will be able to see the benefits of technology and actually benefit from them. Unfortunately, as we'll see later, most technology that is out there not targeted at associates, but rather at partners—a much harder sell.

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5 One might consider two situations here. First, one in which there is more than enough work to go around, so that if an associate's 50-hour task is reduced to 40 hours there will always be another 10-hour task available to fill up the time. Second, a situation in which reducing task time results in a reduction of hours billed because there is no more available work. One might think that in this latter situation, associates would prefer to *not* complete their tasks more efficiently. However, practically speaking, even if this were the case, no individual associate would turn down the option of higher efficiency: they could complete the task faster, and as long as the average time it takes to complete the task is the same for all associates, still bill the rest of the time, say by reviewing their work. Of course, each associate that uses a more efficient method reduces the average time it takes to complete a task, but associates will not take this negative externality / feedback loop into account when making their individual decisions.

Bringing it together: Characteristics of Successful Technology

The discussion of barriers and stakeholders above suggests that successful technology will have the following characteristics:

Good Characteristics	Bad Characteristics
• Offers efficient solutions to specific problems **OR** Provides a well-designed foundation that is flexible enough so as to allow users to adapt it to solve specific problems (cf., e.g., Emacs, grep)	• Does too many things at once • Unclear purpose • Inadequate documentation
• Complementary to current workflow • Does not immediately displace current technology • Has low multi-homing costs (does not create lag, interrupt other workflow, create integration difficulties, etc.)	• Requires users to change critical parts of their current workflow (e.g., a utility that does not integrate well with Microsoft Word)
• Can be adopted by individuals even if their firm does not adopt it • Has sufficient standalone value for such adoption by individuals • Does not depend on network effects (e.g., email is only useful if everyone has email)	• Derives most of its (potential) value from widespread adoption and the network effect
• Easy-to-use and intuitive user experience and user interface • Does not require pre-existing technical skills to use • Fast initial learning curve	• High barriers to adoption / initial learning curve
• Focuses on improving quality of work experience rather than mechanical efficiency	• Even if more time-efficient, makes quality of time / work experience worse
• Where appropriate, tracks and manages use and related information • Where appropriate, allows such information to be exported	• Information is not secure
• Offers measurable and marketable advantages, such as marketable increases in efficiency or quality of work	• Has ambiguous or unquantifiable benefits for the firm's work product

II. Current Technology

Core Technology

There are four staple technologies that any firm needs in order to draft, edit, collaborate on, and manage transactional documents: a word processor, a document management system, email, and a way to manage billable hours. This section will examine what's currently being used.

The Word Processor

Over the course of my summer, every document that was edited was generally saved in a .doc or .docx format; that is, using Microsoft Word. For some reason, there was no standard between .doc and .docx, and so files were essentially random.[6] Final documents were generally saved as .pdf files. Sometimes, less-than-final documents were saved as .pdf files, and all changes to be made were done by sending hand edits or written instructions to the "printers".[7]

The firm's installation of Microsoft Word included several firm-specific add-ons for formatting and form-creation. The formatting add-ons had little utility, and while the form-creation features were useful for starting with the right template, they actually made filling it out more difficult than it would have been had templates simply been saved in a .dot or .dotx format.

Word is a powerful tool, no doubt. I'm writing this paper in word, and for standalone documents, it produces great results. Word's weakness lies in its (slow) speed and complexity. While Word is customizable (with add-ons) and can be integrated into other pieces of software, it isn't easy to do so and the learning curve is unreasonable for an average person. That is, to lawyers, Word will likely always be "as is" plus third-party add-ons – there will never be room for customization to come from within.

Word's speed also creates unnecessary delay in completing administrative tasks. Compiling a summary of over one hundred contracts in Word is time consuming, and a large portion of that time is spent simply waiting for Word to open and close documents.[8] By contrast, managing multiple files (for say a programming task) in any text editor (for example, Sublime Text) is extremely fast, and no similar time is wasted.

The Document Management System

A central depository of files – a "worksite" – is necessary in order to store, backup, and share documents. The worksite is also useful for finding precedent. There is substantial competition among

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6 This actually creates significant problems or complexity for software operating on the documents. For example, a program that compares two word documents for differences generally has to open the files in word to operate on them, because working with raw .doc files is quite difficult (see, e.g., http://msdn.microsoft.com/en-us/library/gg615596(v=office.14).aspx). If all files were saved in the .docx format, which is simply a zipped set of .xml files, it would much easier to compare them, without the unnecessary overhead of opening and closing a Microsoft Word process.

7 Yes. Really. I can't imagine a more inefficient way to do things.

8 I was actually assigned such a task over the summer. I got so frustrated with the delay due to Microsoft Word that I had to find a workaround to reduce it. I ended up using Microsoft Excel and a separate text comparison utility, which ended up saving several hours (roughly cutting the total task time in half).

worksite providers,[9] and the software is generally of high quality. Significant features include search, security restrictions, integration with email and word processors, and document version management. The worksite at my firm was fully functional, and an overall excellent piece of software. One minor gripe is that I would have liked to have access to better search tools. As the worksite is the main place to go to for precedent, it seems odd that one cannot make more advanced search queries: the use of regular expressions or of an advanced search system akin to Westlaw would have made it a whole lot easier.

Email and Time Tracking

For email, Microsoft Outlook is likely the standard choice. It integrated well with the worksite, and provides all required functionality. The software for managing billable hours was an offshoot of the worksite. It was fully functional, though could have been improved with more automation (i.e., a non-trivial amount of time was spent inputting billable information, which could be reduced significantly with a little thought and automation).

Other Technologies

In addition to the core technology, several other types of software exist.

Contract Review Software

E.g., DiligenceEngine, https://diligenceengine.com/, performs "technology-enhanced contract review" that is guided by a machine-learning algorithm. "Our system … automatically reads contracts for user-specified provisions (e.g., change of control, assignment, term), puts its findings into summary charts, and includes workflow tools to help users refine results."[10] My rough understanding is that it will be able to identify certain sections of a set of contracts. For example, if one wanted to check whether a company's material contracts could be assigned without a waiver in a certain transaction, this software would identify the relevant assignment provisions.

If this integrated well with the worksite I could see it being quite useful, as a similar task at my firm was done manually. The downside to this software is that it remains unclear how client information is used, and they are seemingly offering DiligenceEngine as a cloud-based solution, which has questionable purposes. As an individual associate I would be uncomfortable "signing up" for this service. Partners would likely have to be sold on it personally.

Contract Drafting and Templating Software

E.g., ContractExpress, http://www.business-integrity.com/, offers both a drafting and a template authoring tool. The template authoring tool offers features such as Word integration, clause libraries, special markup (for automating certain tasks), cross-referencing, and more.[11] The drafting tool integrates with the Word track/accept changes ribbon and allows for easy data changes in the document (e.g., changing "cash and shares" to "cash only" throughout a Share Purchase Agreement).[12]

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9 See e.g., http://www.workshare.com/, http://www.autonomy.com/products/worksite, https://www.box.com/business/industry/legal/, and many others.

10 http://blog.diligenceengine.com/2013/09/09/what-contract-review-software-systems-do-and-why-they-exist-contract-review-software-buyers-guide-part-ii/

11 http://www.business-integrity.com/technology/contractexpress-author/

12 http://www.business-integrity.com/technology/contractexpress-drafter/

This technology looks like it could be incredibly useful to me, if designed well. It's complementary to the current workflow and offers solutions for several problems. Several top law firms use this software.[13] Competitors include Litera,[14] HotDocs,[15] BrightLeaf,[16] and Koncision.[17] As far as I know, my firm did not have anything that was comparable, and several other firms are also lacking. In addition, it's not clear that any of these solutions include several important features, such as autofill and precedent management. Finally, none of these solutions could be used by an individual attorney, but rather would have to be adopted by the whole firm, office, or group within the firm. Such large adoptions are difficult, which may explain the lack of big customers.

E.g., Turner, http://papersoftware.com/index.html, which is a contract drafting tool like ContractExpress, which includes features such as advanced search, autofill, and cross-referencing. Unlike ContractExpress, Turner is made to replace Word as the primary word processor, which is both good and bad. It's great in that it looks to be much more effective than word for the specific task it performed. It's bad in that it replaces word, which interrupts the current workflow. The biggest plus to Turner is that it looks to be easily adoptable by a single attorney as a replacement word process. While it replaces word, it can open and save things as word documents. The biggest negative is that it is unfortunately only available on Mac, which makes it completely useless for most big law firms, which use Windows.

The Problem With Current "Other Technology" Offerings

Honestly, both Turner and ContractExpress (among others) sound like they would be great tools to have for transactional work, but my firm had no comparable software. One must ask why – even if neither offering is complete in terms of features, the features they should be more than enough of a value-add to justify their use. The critical insight to draw from this is that the problem must thus not lie in their features, but in the adoption process.

In part I, I outlined the characteristics necessary for a technology's successful adoption. The three key characteristics were: (1) solves a specific problem, (2) without interrupting current workflow, and (3) is easily adopted by an individual attorney. Each individual example above violates one of these three characteristics. As I wrote above, I would be uneasy to put DiligenceEngine to use as an individual attorney. Turner is not compatible with the vast majority of Windows-based workflows (if it were, I could definitely see individual attorneys adopting it). And all of the contract drafting and templating software I looked at was only really available for adoption at the firm level – individual attorneys wouldn't know how to go about getting it even if they tried. Indeed, the only successful offerings were those contract drafting and templating solutions that had been sold at a firm level – partners had to buy into the software.

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13 Law firms using ContractExpress include Latham & Watkins, Clifford Chance, Allen & Overy, Goodwin Proctor, and others. http://www.business-integrity.com/customers/.
14 http://www.litera.com/, which offers a vast array of products, and who's customers include DLA Piper, Cravath, Freshfields, and Akin Gump, among others.
15 http://www.hotdocs.com/, used by Hogan Lovells, Fenwick & West, and Orrick, among others.
16 http://www.brightleaf.com/, used by Foley & Lardner.
17 http://www.koncision.com/

Thus, at least in terms of penetrating big law, I think the technology companies above have got the wrong idea. The right way is to create many small solutions for specific problems, that do not interrupt current workflow, and that can be adopted by individual attorneys. For example, over the summer I was tasked with a rather simple assignment that was largely administrative. However, this is an assignment that first-year associates in a particular practice group do on a regular basis. I was able to save a significant amount of time on this task by creating a simple tool. It cut down the time so significantly, that others inquired as to how I completed my work so fast. I provided other attorneys with the tool. I don't know that it's still being used, but I sure hope so. This, I think, is the way to the successful adoption of efficient transaction tools: win the individual associates, and you will win the firm.

III. Technology-Enhanced Lawyers

Portions of transactional legal work can be made more efficient through the effective use of technology, particularly those tasks that are administrative in nature (defined term checks, contract review, document comparison, data entry, etc.). However, several barriers stand in the way of the development and adoption of such technologies. The complexity of legal work, combined with the reality that all but the simplest solutions must be adopted at the partner level makes it difficult for new technology to penetrate the big law space. From my limited experience, it is my belief that the best way for innovation to proceed is the creation and dissemination of effective solutions to individual problems at the associate level that are adoptable by individual associates.

Solutions to Specific Associate-Level Problems

For a new tool to have the best chance of success, it should be targeted at a specific problem facing associates and should not create barriers to adoption by individual associates. Rather than be a general "does-it-all" solution like, for example, ContractExpress, new tools should be extremely specific as to the problem it wants to solve.

Based on my experience, we can divide problems that might find technological solutions into: (a) specific repetitive tasks that could be automated, (b) specific repetitive queries or the aggregation of information in easy-to-use formats, (c) lack of uniformity in both document and file formats, and (d) the unnecessary multiplicity problem. Although my experience is minimal, and I will be unable to make a comprehensive list of solutions, I will attempt to give one to two concrete examples of a useful utility falling into each category.

Repetitive Tasks

Repetitive tasks might either be automated or cut out completely.

An example of a repetitive task that can be automated is contract comparison. We have a firm that has one hundred customers. The negotiations with each customer resulting in many variations on the same contract. For whatever reason, differences were not tracked as they were created, and now it is the lawyers' job to create a summary of all the differences in the contracts.[18] This task can be almost fully automated with a simple script.

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18 This was actually one of my assignments over the summer.

An example of a repetitive task that can be cut out completely is the "look back" in the defined term search. For whatever reason, drafters sometimes choose to define defined terms multiple times in the same agreement. This can result in inconsistent definitions, as sometimes changes are made to one definition but not another.[19] Inconsistent use of defined terms can also result due to uncapitalized terms in some sections due to different sections being drafted by different drafters. We thus often need to look back to the first use of a defined term to determine its definition, and see if its use is consistent throughout. This "look back" through the agreement is easily cut out by a pop-out displaying the first use of the defining terms whenever the user hovers over a defined term (or uncapitalized similar term).

Information Management

Contract management software, e.g., DiligenceEngine, provides a great example of how information might be managed better to save time and make work more enjoyable. This is sort of like automating the task of compiling all of the information in a presentable format, except that but for the software that task would never have been performed. With such software we would quickly be able to determine the important characteristics of company contracts without having to go through them manually. This also helps with the unnecessary multiplicity problem, discussed later. However, one would have to create a tool for this that is not difficult to adopt for associates, as is the DiligenceEngine solution. As I wrote above, I would be uncomfortable using DiligenceEngine without partner approval because it is on the cloud, would require me to sign up, and they collect information.[20]

Another extremely useful informational tool would be a precedent management tool. A young lawyer is tasked with preparing a simple document, and is given a handful of precedents to look at for doing so. In order to properly prepare the document each clause of each precedent must be compared with the prepared document. Having a special application for this could reduce the number of eye movements, page turns, mouse clicks, and/or alt-tabs (depending on how the lawyer chooses to do this). What I am envisioning is difficult to describe in text, but the application would essentially allow fast flip through of precedent by section, paragraph, and clause. Thus, if one liked a clause in precedent B, but wanted to use the language of precedent A for the rest of the document, one wouldn't have to either manually type the clause or switch windows twice and copy-paste twice.

Other useful tools might provide contract analysis (summarizing what's in a contract; e.g., the utility might write: "this contract is missing an assignment clause"), auto-fill suggestions from similar or related documents, and auto-sync for related documents (e.g., several documents relating to a transaction will describe the transaction – and often one must make changes to that description in all of them at once).[21]

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19 This actually happened in one of my assignments over the summer.

20 E.g., from their privacy policy: "We may use user information to improve our website and system. We will only do so if we can preserve the confidentiality of user identifiable information." https://diligenceengine.com/privacy.

21 This scenario occurred to me during an actual assignment this summer.

No Uniform Formats

It's remarkable to me that there is no standard for formatting across documents. File formats differ (.doc and .docx), formatting conventions differ (e.g., single space after period and double space, among many others, even within the same document), and even the way versions are managed cross-firms.

Word processing within the industry is ruled by Microsoft Word, but Word has many disadvantages. First and foremost is probably its speed and instability. Even with the most recent version of Word on my modern laptop (which is faster than my firm's laptops were), opening, closing, and editing documents is far from flawless. It's one thing to lose a couple hours progress writing a school paper, but it's far worse to lose hours paid for by a client. Word's speed also makes it difficult to perform certain operations like text comparison.[22] The second, and almost as annoying, disadvantage of Word is the way it handles formatting. Formatting is hidden (it's WYSIWYG, inconsistently applied, and the autoformat feature can be extremely frustrating.

This can all be solved by a simple conversion utility that takes a Word-formatted document and translates it into some useful unified text-based format (e.g., LaTeX or an XML-based format).[23] Having such a tool would allow lawyers to edit only the content of a document, while leaving the formatting separate. Because editing would essentially be text-based, the editor would have a low memory footprint in comparison to word, and would therefore be more stable and work faster.

Creating an easy to understand text-based format for legal documents also opens the doors to automation. Document comparison becomes trivial; cross-references, tables, and chart creation becomes easy; form-based document creation and management will no longer be slow and buggy; tabs, split screens, auto-fill, defined term popups, and the like all become possible; and the potential for other add-ons, macros, and customizations grows. The editor becomes more of an IDE than a processor, and the "legal programming language!" post-it I put up on my wall comes one step closer to reality.

Another great feature of a text-based equivalent to .docx is enhanced collaboration, sharing, and versioning. Comments can easily be inputted and shared, which might help greatly with the unnecessary multiplicity problem discussed next. Versioning can be easily managed via a git-like method. Publishing can automatically delete comments and metadata.

Finally, the beauty of a simple conversion utility and a unified text-based format is that it can be adopted at the associate level by anyone who wants to leverage the advanced features and greater control offered.

Unnecessary Multiplicity

Generally speaking, everyone working on a particular deal must be up-to-date and informed as to the facts and recent developments. As a consequence, new assignees are usually given a set of documents

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22 I had to do this many times over the course of the summer, and each time I was frustrated by the lag, which was mostly due to Word's large memory footprint.

23 The caveat here is that Word's .docx format, which is XML based, may be sufficiently flexible for these purposes, so that a conversion wouldn't be necessary given the right development environment (e.g., one could build a special legal IDE for .docx files). I just don't know enough about it.

to review before they do any work on a project, and telephone conferences are often held with many people listening in, even if their presence is not actually required. This "getting up to speed" problem, among other circumstances, results in sometimes unnecessary multiplicity of effort.

For example, it simply does not make sense for an associate to spend one hour on a call if their presence is not required, and only 10% of the call is relevant for their job. One easy way to solve this specific form of multiplicity, which is unfortunately not adoptable at the individual associate level (but is likely adoptable at the individual partner level), is to allow for recorded playback of meetings at higher than 1x speeds, with rewind capabilities.[24] I sat in on several meetings this summer where my presence was absolutely unnecessary. Sometimes, I would miss something early on and struggle in trying to understand the rest of the meeting. Moreover, most of the meeting was too slow, and could have been understood much faster. A tool like this would have such a strong measurable impact that I'm sure it could be sold at the partner level.[25] Because post-meeting debriefs are often necessary and would drastically reduce the utility of such a tool if playback was only available post-meeting, the tool could provide playback during the last two-thirds of a meeting, so that the associates would finish the accelerated playback around the same time the partner does.

Conclusion

This summer I felt limited by technology. It was not so unlike playing poker back in 2007, with low resolution on a single laptop screen, a lagging database, and limited statistics and models. By 2010, I had invested thousands of dollars and more than a handful of hours into developing my poker technology and had created a workflow that would make my 2007 setup seem painful – the technology was no longer a frustration, but a huge boon. To this day, I am still creating poker utilities for my friends.

This same shift, from a complete lack of technology, to being technology-enhanced is possible for lawyers too. The difference is that the barriers to technology adoption are completely different: instead of being a matter of hardware and hard work, it is a matter of institutional barriers. The complexity of legal tasks makes comprehensive solutions impossible; entrenchment and incentives make partner-level adoption difficult; and the variety of workflows take replacement of current tools off the table. It's no wonder that current players have not succeeded to break into the industry: each of the solutions I've looked at has gotten hit by one of those barriers to entry. The answer then, as above, is this: create software that solves specific problems, is complementary to current workflow, and is adoptable at the individual associate level. Such software, if effective, is bound to be successful.

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24 This suggestion also applies to school classes. There is not a single online tutorial or recorded lecture that I could watch at 1.5x or 2x speed and did not watch at such speed. The speed of speech is simply too slow for the speed of thought.

25 Consider a partner who has 3 associates sit in on a one hour call (none of which are actually necessary for the call). That partner could save the client 15 min / associate * 3 associates * $300 / hr = $225 / call.