

# Module Part 1:

## Session: Artificial Intelligence and Automation

1. Which legal functions are most amenable to automation and why?

- Will robots steal your legal job?

2. What are the trade-offs in automating human activities

- Morals and the machine

3. Four fundamentals of workplace automation

4. How fair is automated ODR?

- Online Dispute Resolution article

5. How might the idea of law change? The materiality of what?

- The future of the law profession

6. Digital technologies and artificial intelligence's present and foreseeable impact on lawyering, judging, policing and law enforcement paper

7. Workshop session: Creating interactive legal documents from plain information text: QnA Markup Language

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# Reading Material

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# 1. Will Robots Steal Your Legal Job?

Source: [http://www.slate.com/articles/technology/robot\\_invasion/2011/09/will\\_robots\\_steal\\_your\\_job\\_5.html](http://www.slate.com/articles/technology/robot_invasion/2011/09/will_robots_steal_your_job_5.html)

Imagine you've been served with a legal complaint. Your startup company makes a very popular widget, and your chief rival, MicroWidget International, is suing for patent infringement. If MicroWidget prevails, you could be out tens of millions of dollars. You go to your in-house lawyer, who recommends that your company hire a patent expert at Moneybags & Moneybags, LLP. The next day, a brigade of Moneybags lawyers marches into your firm and outlines your options. Defending the MicroWidget case will be costly—in addition to the thousands of billable hours for the attorneys assigned to your case, you'll have to hire expert witnesses and jury-selection specialists, and pay for travel and court filing fees. The total legal bill will be about \$5 million, give or take. But Mr. Moneybags, Esq., the firm's ancient senior partner, assures you it will be money well spent—he's worked on many of these cases, he says with a wink, and he's got a gut feeling you'll win this one. Your other option is to settle with MicroWidget. You could pay a licensing fee of \$10 million, which would be painful, but not fatal, to your firm—and it would allow you to go on with your business.

What do you do? There's no easy answer. The legal industry is one of the few remaining outposts of the corporate world whose operations are dictated mainly by human experience. Basic questions that anyone would want to know before committing to a million-dollar case—How likely is it that I'll win? How good are my lawyers? Should I settle?—can't be answered with certainty. "There's a culture in the law around expertise," says Daniel Katz, an assistant professor at the Michigan State University College of Law who is among the vanguard of legal researchers working to bring empiricism and artificial intelligence into law. "There's a lot of human intuition, and people tend to think that whatever legal knowledge they have is uniquely human, and not subjectable to data and computers and automation." Katz is working on something he calls "quantitative legal prediction." Thousands of patent cases are filed every year in the United States. There's a good chance, then, that MicroWidget's case against you shares some similarities with a bunch of those other cases. What if you could analyze the key features of MicroWidget's claim, and then see how thousands of comparable cases fared? "Lawyers will be able to say to their clients, 'Here's what we think your chances are—and based on 10,000 cases that are just like yours, here's what the computer thinks your chances are,'" Katz explains. There is no machine that does this today, but it's coming. In the last piece, I examined the technology that's encroaching on journalism—computers are getting so skillful with language that they can now write stories all by themselves. But journalists are small fry; if you want to go after a profession that relies heavily on language, the deep-pocketed legal world is a fatter target. In the last few years, the law has seen a rush of technological innovation, all stemming from computers' increasing capacity to decipher and understand written documents. Many law firms now use "e-discovery" tools that can scan large caches of evidence in search of interesting facts and figures. Firms also have software to draft legal documents in a fraction of the time a human would take. And a few services on the horizon might do even more—negotiate the terms of a contract, for instance, or determine whether or not you should sue.

Automation will bring legal services to the masses. Many people who ought to hire an attorney to handle business or personal disputes can't afford to do so. Software could potentially step in when you want to fight your mortgage lender, draw up contracts to start a small business, or sue for child-support payments. While legal automation will be a boon for those who can't afford representation, it's bad news for lawyers. The industry is already in a slump, and law school is no longer seen as a sure path to riches. Because software will allow fewer lawyers to do a lot more work, it's sure to drive down both price and demand. In my article on robots and medicine, I argued that primary-care physicians might survive the robot invasion because their jobs depend on irreplaceably human skills, like the ability to steer a face-to-face conversation. At first glance, the law seems similar: Laws are designed by human politicians and they're enforced by human authorities. When disputes arise, they're settled by human judges and juries. And just about every aspect of the legal world—from the specialized language involved in contracts and complaints to the complex analytical reasoning and reliance on precedent mastered by clerks and judges—springs from the frontal lobes of those strange creatures we call lawyers. Yet if you look at the tasks most lawyers perform each day, you find many that machines can handle. Language processing, grappling with complex logic, making predictions about situations involving several variables—computers are getting better at all of this stuff. Consider that most pedestrian of legal tasks: writing up a business contract. In her career, an attorney might design thousands of contracts,

many of which contain numbingly similar bits of language. Now, several legal tech companies have created programs that build these documents automatically. These pieces of software work a bit like TurboTax, asking a series of questions and using branching logic to delve deeper into specific areas. Matt Kesner, the chief information officer of the pioneering Silicon Valley law firm Fenwick & West, told me that document-creation programs save its clients time and money. Last year, Fenwick developed a system that automatically creates the documents that startups need when incorporating. "It reduced the average time we were spending from about 20 to 40 hours of billable time down to a handful of hours," Kesner says. "In cases with even extensive documents, we can cut the time of document creation from days and weeks to hours."

E-discovery software has been similarly revolutionary. These systems can mine huge volumes of material (like all the email correspondence in a civil suit) for damning evidence. The simplest software looks for specific keywords, but more sophisticated systems can detect patterns of behavior that might interest lawyers. This was the sort of work that once consumed the lives of first-year associates; now computers do it faster, at lower cost, and with about as much success as humans. At the moment, human lawyers have one thing on their side: The legal world is generally suspicious of automation, and in some respects downright inhospitable to it. To build his legal-prediction system, Daniel Katz needs a large cache of case documents. But such databases aren't readily available. Courts publish written decisions, but other data—like case filings and motions—are locked in databases like the federal courts' PACER system, which charges a fee for access. Until that information is easier to extract, human lawyers will have an edge.

But just as the rules and regulations protecting human pharmacists won't be around forever, lawyers shouldn't take comfort in today's imperfect databases and software. Katz and other researchers are working on ways to extract and interpret historical data—one project, called RECAP, aims to build a free mirror of PACER. And in some specialized areas of the law, data analysis is already widespread. In 2008, a group of attorneys and technologists at Stanford created the Intellectual Property Litigation Clearinghouse, a project that tracks more than 100,000 patent and trademark lawsuits. The database—which Stanford spun off last year into a start-up called Lex Machina—is the most comprehensive collection of patent suits ever assembled, and it has already helped overturn some bedrock beliefs in patent law. For years, patent attorneys believed that courts in the Northern District of California tended to be friendly to defendants, while courts in the Eastern District of Texas favored plaintiffs—a line of thinking that routinely prompted lawyers to go venue shopping. "But when we checked in the Northern District of California, plaintiffs were winning more on trial—the opposite of conventional wisdom," says Joshua Walker, Lex Machina's CEO.

Stories like these—instances of data analysis revealing errors in human perception—suggest the power of computerized analysis. Lex Machina is still a young project, and at the moment nobody is using the database to make predictions about the outcomes of specific patent cases. Still, you can see how such a system would come in handy in your suit with MicroWidget. At the very least, you could use it to pick your lawyers and to decide whether or not to settle. Walker argues that something like Lex Machina is designed to supplement human intelligence rather than replace it. By augmenting humans, he says, the database is making lawyers better at what they do. That may be true. But it's also true that systems that help clients decide, systematically, whether or not to sue—and which legal representation to hire, and where to file the case—will reduce the utility of lawyers. None of the legal researchers I spoke to disputed this, but some argued that, in the long run, automation would make being a lawyer more fun. Much of the work that computers are taking on is the stuff that lawyers hate to do. As Daniel Katz sees it, attorneys will be able to outsource the worst of the jobs to machines, while they'll increasingly focus on managing client relationships and ensuring the computers are doing their jobs. "You'd keep the virtual assembly line moving along—you'd be the maestro moving the stick, in charge of the whole process," Katz says. Not only will automation allow lawyers to escape drudgery, but it will also let them serve more clients. What's more, instead of serving just a handful of high-paying clients, this maestro might be able to use machines to help serve thousands of clients over the Web, providing legal help to those who can't access it today. If automation brings more people legal services, at lower prices, while also pruning the ranks of human lawyers, I suspect most readers will consider that a win, win, win. And in the long run, this could well be. The trouble is that the path from here to there will be rocky—many firms will be shuttered, an ever-larger number of newly minted young attorneys will fail to find work, and a huge industry's economic prospects will fade. Still, of all the professions I've covered so far, the prospects for the legal industry seem the least awful. Sure, lawyers will suffer, but the rest of us will benefit. "The law doesn't exist to provide jobs for lawyers," Katz says. "That's not its function in society. It's there to help people solve problems—and if we could serve more people with fewer lawyers, I don't think that's an unreasonable path to take."

## 2. Morals and the machine

**As robots grow more autonomous, society needs to develop rules to manage them**

**Source:** <http://www.economist.com/node/21556234>

As robots become more autonomous, the notion of computer-controlled machines facing ethical decisions is moving out of the realm of science fiction and into the real world. Society needs to find ways to ensure that they are better equipped to make moral judgments than HAL was in the movie 2001.

Military technology, unsurprisingly, is at the forefront of the march towards self-determining machines. Its evolution is producing an extraordinary variety of species. The Sand Flea can leap through a window or onto a roof, filming all the while. It then rolls along on wheels until it needs to jump again. RiSE, a six-legged robo-cockroach, can climb walls. LS3, a dog-like robot, trots behind a human over rough terrain, carrying up to 180kg of supplies. SUGV, a briefcase-sized robot, can identify a man in a crowd and follow him. There is a flying surveillance drone the weight of a wedding ring, and one that carries 2.7 tonnes of bombs. Robots are spreading in the civilian world, too, from the flight deck to the operating theatre. Passenger aircraft have long been able to land themselves. Driverless trains are commonplace. Volvo's new V40 hatchback essentially drives itself in heavy traffic. It can brake when it senses an imminent collision, as can Ford's B-Max minivan. Fully self-driving vehicles are being tested around the world. Google's driverless cars have clocked up more than 250,000 miles in America, and Nevada has become the first state to regulate such trials on public roads. In Barcelona a few days ago, Volvo demonstrated a platoon of autonomous cars on a motorway.

As they become smarter and more widespread, autonomous machines are bound to end up making life-or-death decisions in unpredictable situations, thus assuming—or at least appearing to assume—moral agency. Weapons systems currently have human operators “in the loop”, but as they grow more sophisticated, it will be possible to shift to “on the loop” operation, with machines carrying out orders autonomously. As that happens, they will be presented with ethical dilemmas. Should a drone fire on a house where a target is known to be hiding, which may also be sheltering civilians? Should a driverless car swerve to avoid pedestrians if that means hitting other vehicles or endangering its occupants? Should a robot involved in disaster recovery tell people the truth about what is happening if that risks causing a panic? Such questions have led to the emergence of the field of “machine ethics”, which aims to give machines the ability to make such choices appropriately—in other words, to tell right from wrong.

One way of dealing with these difficult questions is to avoid them altogether, by banning autonomous battlefield robots and requiring cars to have the full attention of a human driver at all times. Campaign groups such as the International Committee for Robot Arms Control have been formed in opposition to the growing use of drones. But autonomous robots could do much better than harm. Robot soldiers would not commit rape, burn down a village in anger or become erratic decision-makers amid the stress of combat. Driverless cars are very likely to be safer than ordinary vehicles, as autopilots have made planes safer. Sebastian Thrun, a pioneer in the field, reckons driverless cars could save 1m lives a year.

Instead, society needs to develop ways of dealing with the ethics of robotics—and get going fast. In America states have been scrambling to pass laws covering driverless cars, which have been operating in a legal grey area as the technology runs ahead of legislation. Rules of the road are required in this difficult area, and not just for robots with wheels. The best-known set of guidelines for robo-ethics are the “three laws of robotics” coined by Isaac Asimov, a science-fiction writer, in 1942. The laws require robots to protect humans, obey orders and preserve themselves, in that order. Unfortunately, the laws are of little use in the real world. Battlefield robots would be required to violate the first law. And Asimov's robot stories are fun precisely because they highlight the unexpected complications that arise when robots try to follow his apparently sensible rules. Regulating the development and use of autonomous robots will require a rather more elaborate framework. Progress is needed in three areas.

### **Three laws for the laws of robotics**

First, laws are needed to determine whether the designer, the programmer, the manufacturer or the operator is at fault if an autonomous drone strike goes wrong or a driverless car has an accident. In order to allocate

responsibility, autonomous systems must keep detailed logs so that they can explain the reasoning behind their decisions when necessary. This has implications for system design: it may, for instance, rule out the use of artificial neural networks, decision-making systems that learn from example rather than obeying predefined rules.

Second, where ethical systems are embedded into robots, the judgments they make need to be ones that seem right to most people. The techniques of experimental philosophy, which studies how people respond to ethical dilemmas, should be able to help. Last, and most important, more collaboration is required between engineers, ethicists, lawyers and policymakers, all of whom would draw up very different types of rules if they were left to their own devices. Both ethicists and engineers stand to benefit from working together: ethicists may gain a greater understanding of their field by trying to teach ethics to machines, and engineers need to reassure society that they are not taking any ethical short-cuts.

Technology has driven mankind's progress, but each new advance has posed troubling new questions. Autonomous machines are no different. The sooner the questions of moral agency they raise are answered, the easier it will be for mankind to enjoy the benefits that they will undoubtedly bring.

### 3. Four fundamentals of workplace automation

Source: <http://www.mckinsey.com/business-functions/business-technology/our-insights/four-fundamentals-of-workplace-automation>

The potential of artificial intelligence and advanced robotics to perform tasks once reserved for humans is no longer reserved for spectacular demonstrations by the likes of IBM's Watson, Rethink Robotics' Baxter, DeepMind, or Google's driverless car. Just head to an airport: automated check-in kiosks now dominate many airlines' ticketing areas. Pilots actively steer aircraft for just three to seven minutes of many flights, with autopilot guiding the rest of the journey. Passport-control processes at some airports can place more emphasis on scanning document bar codes than on observing incoming passengers. What will be the impact of automation efforts like these, multiplied many times across different sectors of the economy? Can we look forward to vast improvements in productivity, freedom from boring work, and improved quality of life? Should we fear threats to jobs, disruptions to organizations, and strains on the social fabric?

Earlier this year, we launched research to explore these questions and investigate the potential that automation technologies hold for jobs, organizations, and the future of work. Our results to date suggest, first and foremost, that a focus on occupations is misleading. Very few occupations will be automated in their entirety in the near or medium term. Rather, certain activities are more likely to be automated, requiring entire business processes to be transformed, and jobs performed by people to be redefined, much like the bank teller's job was redefined with the advent of ATMs. More specifically, our research suggests that as many as 45 percent of the activities individuals are paid to perform can be automated by adapting currently demonstrated technologies. In the United States, these activities represent about \$2 trillion in annual wages. Although we often think of automation primarily affecting low-skill, low-wage roles, we discovered that even the highest-paid occupations in the economy, such as financial managers, physicians, and senior executives, including CEOs, have a significant amount of activity that can be automated.

The organizational and leadership implications are enormous: leaders from the C-suite to the front line will need to redefine jobs and processes so that their organizations can take advantage of the automation potential that is distributed across them. And the opportunities extend far beyond labor savings. When we modeled the potential of automation to transform business processes across several industries, we found that the benefits (ranging from increased output to higher quality and improved reliability, as well as the potential to perform some tasks at superhuman levels) typically are between three and ten times the cost. The magnitude of those benefits suggests that the ability to staff, manage, and lead increasingly automated organizations will become an important competitive differentiator.

What follows here are four interim findings elaborating on the core insight that the road ahead is less about automating individual jobs wholesale, than it is about automating the activities within occupations and redefining roles and processes.

#### *1. The automation of activities*

These preliminary findings are based on data for the US labor market. We structured our analysis around roughly 2,000 individual work activities, and assessed the requirements for each of these activities against 18 different capabilities that potentially could be automated (See next image). Those capabilities range from fine motor skills and navigating in the physical world, to sensing human emotion and producing natural language. We then assessed the "automatability" of those capabilities through the use of current, leading-edge technology, adjusting the level of capability required for occupations where work occurs in unpredictable settings.



The bottom line is that 45 percent of work activities could be automated using already demonstrated technology. If the technologies that process and “understand” natural language were to reach the median level of human performance, an additional 13 percent of work activities in the US economy could be automated. The magnitude of automation potential reflects the speed with which advances in artificial intelligence and its variants, such as machine learning, are challenging our assumptions about what is automatable. It’s no longer the case that only routine, codifiable activities are candidates for automation and that activities requiring “tacit” knowledge or experience that is difficult to translate into task specifications are immune to automation.

In many cases, automation technology can already match, or even exceed, the median level of human performance required. For instance, Narrative Science’s artificial-intelligence system, Quill, analyzes raw data and generates natural language, writing reports in seconds that readers would assume were written by a human author. Amazon’s fleet of Kiva robots is equipped with automation technologies that plan, navigate, and coordinate among individual robots to fulfill warehouse orders roughly four times faster than the company’s previous system. IBM’s Watson can suggest available treatments for specific ailments, drawing on the body of medical research for those diseases.

## 2. The redefinition of jobs and business processes

According to our analysis, fewer than 5 percent of occupations can be entirely automated using current technology. However, about 60 percent of occupations could have 30 percent or more of their constituent activities automated. In other words, automation is likely to change the vast majority of occupations—at least to some degree—which will necessitate significant job redefinition and a transformation of business processes. Mortgage-loan officers, for instance, will spend much less time inspecting and processing rote paperwork and more time reviewing exceptions, which will allow them to process more loans and spend more time advising clients. Similarly, in a world where the diagnosis of many health issues could be effectively automated, an emergency room could combine triage and diagnosis and leave doctors to focus on the most acute or unusual cases while improving accuracy for the most common issues.



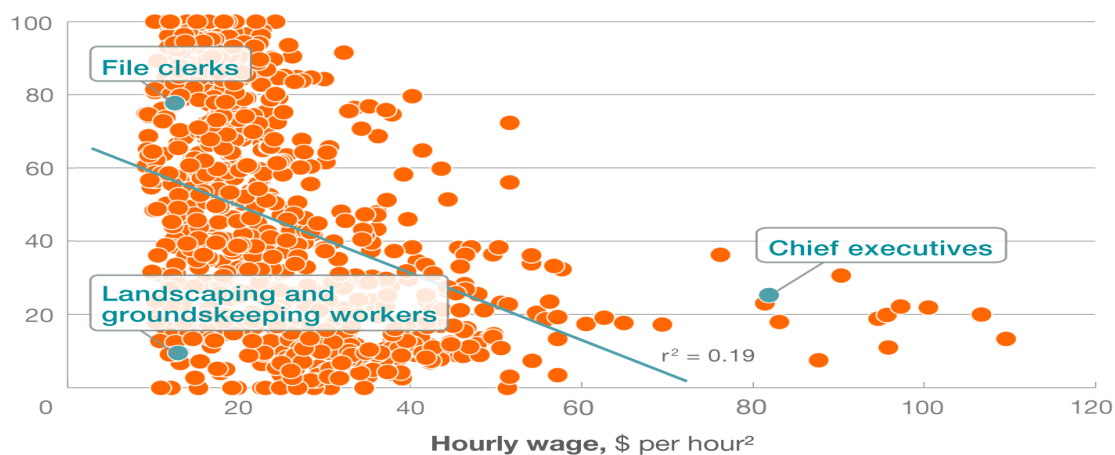
As roles and processes get redefined, the economic benefits of automation will extend far beyond labor savings. Particularly in the highest-paid occupations, machines can augment human capabilities to a high degree, and amplify the value of expertise by increasing an individual's work capacity and freeing the employee to focus on work of higher value. Lawyers are already using text-mining techniques to read through the thousands of documents collected during discovery, and to identify the most relevant ones for deeper review by legal staff. Similarly, sales organizations could use automation to generate leads and identify more likely opportunities for cross-selling and upselling, increasing the time frontline salespeople have for interacting with customers and improving the quality of offers.

### 3. The impact on high-wage occupations

Conventional wisdom suggests that low-skill, low-wage activities on the front line are the ones most susceptible to automation. We're now able to scrutinize this view using the comprehensive database of occupations we created as part of this research effort. It encompasses not only occupations, work activities, capabilities, and their automatability, but also the wages paid for each occupation. Our work to date suggests that a significant percentage of the activities performed by even those in the highest-paid occupations (for example, financial planners, physicians, and senior executives) can be automated by adapting current technology. For example, we estimate that activities consuming more than 20 percent of a CEO's working time could be automated using current technologies. These include analyzing reports and data to inform operational decisions, preparing staff assignments, and reviewing status reports. Conversely, there are many lower-wage occupations such as home health aides, landscapers, and maintenance workers, where only a very small percentage of activities could be automated with technology available today (see next image).

### Comparison of wages and automation potential for US jobs

**Ability to automate**, % of time spent on activities<sup>1</sup> that can be automated by adapting currently demonstrated technology



### 4. The future of creativity and meaning

Capabilities such as creativity and sensing emotions are core to the human experience and also difficult to automate. The amount of time that workers spend on activities requiring these capabilities, though, appears to be surprisingly low. Just 4 percent of the work activities across the US economy require creativity at a median human level of performance. Similarly, only 29 percent of work activities require a median human level of performance in sensing emotion. While these findings might be lamented as reflecting the impoverished nature of our work lives, they also suggest the potential to generate a greater amount of meaningful work. This could occur as automation replaces more routine or repetitive tasks, allowing employees to focus more on tasks that utilize creativity and emotion. Financial advisors, for example, might spend less time analyzing clients' financial situations, and more time understanding their needs and explaining creative options. Interior designers could spend less time taking measurements, developing illustrations, and ordering materials, and more time developing innovative design concepts based on clients' desires.

These interim findings, emphasizing the clarity brought by looking at automation through the lens of work activities as opposed to jobs, are in no way intended to diminish the pressing challenges and risks that must be understood and managed. Clearly, organizations and governments will need new ways of mitigating the human costs, including job losses and economic inequality, associated with the dislocation that takes place as companies separate activities that can be automated from the individuals who currently perform them. Other concerns center on privacy, as automation increases the amount of data collected and dispersed. The quality and safety risks arising from automated processes and offerings also are largely undefined, while the legal and regulatory implications could be enormous. To take one case: who is responsible if a driverless school bus has an accident?

Nor do we yet have a definitive perspective on the likely pace of transformation brought by workplace automation. Critical factors include the speed with which automation technologies are developed, adopted, and adapted, as well as the speed with which organization leaders grapple with the tricky business of redefining processes and roles. These factors may play out differently across industries. Those where automation is mostly software based can expect to capture value much faster and at a far lower cost. (The financial-services sector, where technology can readily manage straight-through transactions and trade processing, is a prime example.) On the other hand, businesses that are capital or hardware intensive, or constrained by heavy safety regulation, will likely see longer lags between initial investment and eventual benefits, and their pace of automation may be slower as a result.

## 4. Online dispute resolution

Online dispute resolution (ODR) is a branch of dispute resolution which uses technology to facilitate the resolution of disputes between parties. It primarily involves negotiation, mediation or arbitration, or a combination of all three. In this respect it is often seen as being the online equivalent of alternative dispute resolution (ADR). However, ODR can also augment these traditional means of resolving disputes by applying innovative techniques and online technologies to the process. The range of terms and acronyms used to describe the field augments the confusion often felt by those unfamiliar with the new field of ODR. These terms include: Internet Dispute Resolution (iDR), Electronic Dispute Resolution (eDR), Electronic ADR (eADR), Online ADR (oADR). ODR has emerged as the most used term in recent years.

ODR is a wide field, which may be applied to a range of disputes; from interpersonal disputes including consumer to consumer disputes (C2C) or marital separation; to court disputes and interstate conflicts. It is believed that efficient mechanisms to resolve online disputes will impact in the development of e-commerce. While the application of ODR is not limited to disputes arising out of business to consumer (B2C) online transactions, it seems to be particularly apt for these disputes, since it is logical to use the same medium (the internet) for the resolution of e-commerce disputes when parties are frequently located far from one another.

### *Defining ODR*

Dispute resolution techniques range from methods where parties have full control of the procedure, to methods where a third party is in control of both the process and the outcome. These primary methods of resolving disputes may be complemented with Information and Communication Technology (ICT). When the process is conducted mainly online it is referred to as ODR, i.e. to carry out most of the dispute resolution procedure online, including the initial filing, the neutral appointment, evidentiary processes, oral hearings if needed, online discussions, and even the rendering of binding settlements. Thus, ODR is a different medium to resolve disputes, from beginning to end, respecting due process principles.

ODR was born from the synergy between ADR and ICT, as a method for resolving disputes that were arising online, and for which traditional means of dispute resolution were inefficient or unavailable. The introduction of ICT in dispute resolution is currently growing to the extent that the difference between off-line dispute resolution and ODR is blurry. It has been observed that it is only possible to distinguish between proceedings that rely heavily on online technology and proceedings that do not. Some commentators have defined ODR exclusively as the use of ADR assisted principally with ICT tools. Although part of the doctrine incorporates a broader approach including online litigation and other sui generis forms of dispute resolution when they are assisted largely by ICT tools designed ad hoc. The latter definition seems more appropriate since it incorporates all methods used to resolve disputes that are conducted mainly through the use of ICT. Moreover, this concept is more consistent with the fact that ODR was born from the distinction with off-line dispute resolution processes.

In ODR, the information management is not only carried out by physical persons but also by computers and software. The assistance of ICT has been named by Katsh and Rifkin as the 'fourth party' because ODR is seen as an independent input to the management of the dispute. In addition to the two (or more) disputants and the third neutral party, the labelling of technology as the fourth party is a clear metaphor which stresses how technology can be as powerful as to change the traditional three side model. The fourth party embodies a range of capabilities in the same manner that the third party does. While the fourth party may at times take the place of the third party, i.e. automated negotiation, it will frequently be used by the third party as a tool for assisting the process.

The fourth party may do many things such as organize information, send automatic responses, shape writing communications in a more polite and constructive manner e.g. blocking foul language. In addition, it can monitor performance, schedule meetings, clarify interests and priorities, and so on.[7]:129 The assistance of the fourth party will increase the more technology advances, thus reducing the role of the third neutral party. It has been predicted that virtual "fourth party" avatars will be created to judge disputes and could become more skilled and intelligent over time. Katsh and Wing argue that ICT advance is occurring exponentially since

ICT advance speeds up over the time. As a result, ODR processes are increasing in efficiency providing their disputants with greater advantages in terms of time saving and cost reductions.

### *Automated Negotiation*

Automated Negotiation relates to those methods in which the technology takes over (aspects of) a negotiation. Most of the ODR services in this area are so-called 'blind-bidding' services. This is a negotiation process designed to determine economic settlements for claims in which liability is not challenged. The blind bidding service may be thought of as a type of auction mechanism where some or all information about the players' bids is hidden. There are two forms of automated negotiation, Double Blind Bidding, which is a method for single monetary issues between two parties, and Visual Blind Bidding, which can be applied to negotiations with any number of parties and issues.

#### *Double Blind Bidding*

Double Blind Bidding is a negotiation method for two parties where the offer and demand are kept hidden during the negotiation. It commences when one party invites the other to negotiate the amount of money in dispute. If the other party agrees, they start a blind bidding process whereby both parties make secret offers or bids, which will only be disclosed if both offers match certain standards. They can usually submit up to three offers and if the bids of both parties come within a predetermined range (usually range from 30% to 5%) or a given amount of money (e.g. €3,000), then the technology automatically settles the dispute in the midpoint of the two offers. Although, it is a simple method, it effectively encourages the parties to reveal their 'bottom line' offers and demands, splitting the difference when the amounts are close.

#### *Visual Blind Bidding*

The primary distinction of Visual Blind Bidding is in what is kept hidden from the other parties. In traditional Double Blind Bidding, the offers and demands are kept hidden, whereas with Visual Blind Bidding what is kept hidden is what each party is willing to accept. This method can be effectively applied to the simplest single-value negotiations or the most complex negotiations between any number of parties and issues. Visual Blind Bidding commences when all parties agree to negotiate with one another. They start the process by exchanging visible optimistic proposals, which define bargaining ranges. The system then generates suggestions that fall within the bargaining ranges. Parties may continue to exchange visible proposals or contribute their own suggestions to the mix. Suggestions contributed by the parties remain anonymous, thus avoiding the face saving problem of accepting a suggestion made by another party. A resolution is declared by the system at the end of a negotiating session if all parties have accepted one or more packages (of one or more proposed decision values) at the end of that session. Which of those packages becomes the agreement may be determined by an algorithm that rewards the party that moves soonest into the Zone of Agreement. This algorithm is thought to encourage concessions and quickly indicate that they are willing to accept a fair outcome. This is in contrast to the chilling effect that occurs with the more common split-the-difference algorithm.

Automated negotiation has proven to be particularly successful with insurance compensations and commercial activities. It is also a valuable tool for lawyers because they too can use it without revealing what they're willing to accept (unless an agreement is reached) and more importantly, without waiving their right to access the court, in the case that the negotiation is unsuccessful. Thus, ODR is useful for resolving brick and mortar disputes that arise in businesses, insurance companies and municipalities, who are finding that ODR saves them money and time when dealing with B2C disputes.

### *Assisted Negotiation*

In Assisted Negotiation the technology assists the negotiation process between the parties. The technology has a similar role as the mediator in a mediation. The role of the technology may be to provide a certain process and/or to provide the parties with specific (evaluative) advice. Mediators use information management skills encouraging parties to reach an amicable agreement by enabling them to communicate more effectively through the rephrasing of their arguments. Conciliation is similar to mediation, but the conciliator can propose solutions for the parties to consider before an agreement is reached. Also, assisted negotiation procedures are designed to improve parties' communications through the assistance of a third

party or software. In fact, it has been argued that assisted negotiation, conciliation, and even facilitation, are just different words for mediation. The major advantages of these processes, when used online, are their informality, simplicity and user friendliness.

#### *SquareTrade*

The leading ODR provider for consumer mediation was until recently SquareTrade. It was contracted by a number of market places, the largest of which was eBay. However, due to changes in the eBay feedback system in May 2008, SquareTrade decided to stop resolving eBay feedback disputes from June 2008. SquareTrade continues providing services to eBay users, such as warranty services and the trustmark program. It appears that in the last year these services have been taken over by eBay and PayPal dispute resolution services, but results on these services are still scarce. SquareTrade did not handle disputes between users and eBay, only between sellers and buyers on eBay. SquareTrade offered two levels of dispute resolution: assisted negotiation and mediation. SquareTrade was only used after eBay's own consumer satisfaction process. In the last few years, SquareTrade has resolved millions of disputes across 120 countries in 5 different languages.

The advantage of dealing with large number of disputes is that the same issues arise many times, thus it is possible to divide the disputes into different sections. The SquareTrade process started when a buyer or a seller filed a complaint. To do so, the claimant was asked to fill out a web-based standard claim form that identified the type of dispute and presented a list of common solutions, from which the claimant selected the ones that he agreed to. The other party was contacted by email where he was informed about the SquareTrade process, and asked whether he wished to participate. The parties were often keen on participating because this was the only manner by which the buyer could get redress and the seller positive feedback. The other party filed the response, selecting the resolutions. If both parties agreed on the same resolution, the dispute was resolved. When an agreement could not be reached, parties were put into a negotiation environment. A web interface was used to shape communications into a constructive and polite negotiation. This was achieved with software tools that limited the free text space, encouraged the proposition of agreements, set deadlines and even shaped the tone of exchanges. Most disputes (over 80 percent) were resolved during the first two stages, which was an impressive success rate given that in the majority of cases, the parties had already been involved in some type of failed direct negotiation before engaging with SquareTrade. In the rest of the cases a mediator could be requested for a nominal fee, acting as an expert evaluator or conciliator that made settlement proposals to the parties. This second stage involved the payment of a 29.95 USD fee. According to SquareTrade, "[a] sophisticated case management technology enables mediators to handle lower to medium-value consumer disputes in an efficient cost effective manner." The appointed mediator proposed solutions, if required by the parties to do so. Agreements were always kept confidential by SquareTrade, and became binding as contracts.

SquareTrade has proven that processes such as online negotiation and online mediation can be efficient tools to resolve e-commerce disputes. One of the key issues for the success of SquareTrade was the simplicity and convenience of this service. In addition, SquareTrade services to eBay were concentrated on a reduced number of issues, such as delays, bad descriptions and negative feedback. This made possible the development of an efficient automatic process that enhanced online negotiation. The success of consensual and automated processes depends on the nature of the dispute, the accuracy of information provided, and the capability of the software or the third neutral party in assessing and evaluating the facts and evidence. SquareTrade was particularly effective because it introduced incentives that encourage parties' participation; i.e. both parties wished to resolve their dispute: sellers want to obtain positive feedback and buyers want redress. In general terms, widening the scope of clients' claims to the global market invites extra variables to play: cultural differences, such as high and low culture perceptions and the cross-cultural variations of what constitutes the customer satisfaction experience.

#### *Expedient Non-Adjudicative Online Resolution*

Another form of alternative dispute resolution prioritizes expedience and dispenses with adjudication all together, in recognition of the litigants' desire to simply dispose of the matter as quickly as possible. By removing any hint of adjudication, services (e.g., One Day Decisions) "fast track" a version similar to blind bidding which is restricted privately to the two parties and an algorithm determines a fair value to be accepted by each party. Unlike other services, once accepted by both parties, the settlement amount is applied to the issuance of a Certificate of Final Resolution which both parties accept as irrevocable proof of resolution and final settlement. By avoiding adjudication, expedient non-adjudicative online resolution saves litigants time in court, time away from work and other fees and expenses, while protecting each from ancillary damage: The

winning party generally collects more of his disputed amount and the losing party suffers no credit damage from having a judgment entered against him. Expedient Non-Adjudicative Online Resolution is generally utilized in cases that might otherwise be heard in small claims or limited civil matters.

### *Crowdjustice*

As an alternative to private, professional settlement, the concept of crowdjustice has recently taken shape as a means to leverage social norms and the wisdom of crowds to determine the outcome of a dispute. This concept forms the basis for the ODR platform Ujud. Ujud (pronounced "you judge") is a patent pending online alternative to small claims court that allows parties to a small claims case to create their arguments on video and upload them to the Ujud web site for the Internet public to vote on the outcome. Parties to a case, known as Claimant and Respondent, agree, through an electronically signed contract, to be bound by the final outcome determined by a jury consisting of the Internet public. Registered users select from all open cases, view the video arguments of the Claimant and Respondent, and then cast their vote on a sliding scale from 0% to 100%, which represents the amount that the user feels should be awarded based on the amount claimed by the Claimant. This vote is added to all other votes on the case and upon case expiration, an average vote is calculated from all votes received. This average is then multiplied by the amount claimed to determine the final award.

### *Adjudicative*

#### *Online Arbitration*

Arbitration is a process where a neutral third party (arbitrator) delivers a decision which is final, and binding on both parties. It can be defined as a quasi-judicial procedure because the award replaces a judicial decision. Arbitrators can be current or former trial judges, but that is not a requirement. However, in an arbitration procedure parties usually can choose the arbitrator and the basis on which the arbitrator makes the decision. Furthermore, it is less formal than litigation, though more than any other consensual process. It is often used to resolve businesses' disputes because this procedure is noted for being private and faster than litigation. Once the procedure is initiated parties cannot abandon it, unless they both agree to discontinuing it (e.g. when they reached a settlement - although usually the settlement will be communicated to the arbitral tribunal and an award rendered on this basis). Another feature of arbitration is that the award is enforceable almost everywhere due to the wide adoption of the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards. Moreover, arbitral awards prove frequently easier to enforce than court decisions from overseas.

The majority of legal studies on online arbitration agree that, neither law, nor arbitral principles, prevent arbitration from taking place online. However, there may be several aspects in online arbitration that need to be regulated. Although online arbitration seems admissible under the New York Convention and the E-Commerce Directive, this is arguably an assumption by most commentators, rather than a legal statement. Since arbitration is based on a contractual agreement between the parties, an online process without a regulatory framework may generate a significant number of challenges from consumers and other weaker parties if due process cannot be assured. Currently, most arbitration providers allow parties to carry out online only part of the arbitration process, e.g. parties may download claim forms, the submission of documents through standard email or secure web interface, the use of telephone hearings, etc. Other providers conduct their proceedings exclusively online, either by email or on a dedicated web platform. A key element of arbitration is the right for a party to question the witnesses of the other parties and that can now be done at low cost with an online audio and video hearing process using newer technologies such as Skype Premium or Google Hangouts. Cross examination of remote witnesses regulated by the arbitrator can ensure the fairness and maintain a judicial quality for the online arbitration process. The main challenge for online arbitration is that if judicial enforcement is required then it partly defeats the purpose of having an online process. Alternatively, some processes have developed self-enforcement mechanisms such as technical enforcements, black lists and trustmarks.

#### *The Uniform Domain Names Dispute Resolution Policy (UDRP)*

Traditionally arbitration resolves disputes by delivering a decision that will be legally binding, i.e. enforceable by the courts in the same manner as a judgment. Non binding arbitration processes may also be effective when using ODR tools because they often encourage settlements by imparting a dose of reality and

objectivity.[36] In addition, self-enforcement measures may reinforce the efficacy of non binding processes. The most significant example is the Uniform Domain Name Dispute Resolution Policy (UDRP) created by the Internet Corporation for Assigned Names and Numbers (ICANN). Some commentators have referred to the UDRP as an administrative process. In any case, the UDRP has developed a transparent global ODR process that allows trade mark owners to fight efficiently cybersquatting. The UDRP is used to resolve disputes between trade mark owners and those who have registered a domain name in bad faith for the purpose of reselling it for a profit, or taking advantage of the reputation of a trademark.

Trademark owners accessing the UDRP must prove to the panel three circumstances:

1. similarity of the domain name to the trade or service mark;
2. lack of rights or legitimate interest in the registered domain name;
3. bad faith in the registration and use of the domain name.

However, the UDRP presents its own problems that show the challenges that an online adversarial system applied to mainstream e-commerce disputes would have. The main worry is that the evaluation of the panel decisions often shows a lack of unanimous consensus in the interpretation of the UDRP. This may be due to a number of reasons, such as the lack of an appellate review and panels composed by members from a multitude of jurisdictions and informed by different legal traditions. On the other side, it is undeniable what ICANN with the UDRP has achieved in developing an effective ODR procedure based on contractual adherence that allows trade mark owners to transfer or cancel a domain that blatantly violates IP rights. The UDRP providers have dealt efficiently with over 30,000 domain name disputes. Their success derives from two aspects: First, the UDRP deals only with blatant disputes, which are abusive registrations made in bad faith in order to take advantage of the reputation of existing trademarks. Secondly, it has incorporated a self-enforcement mechanism, which transfers and cancels domain names without the need for judicial involvement. This is a positive accomplishment for the development of e-commerce because it favours consumers' confidence in the Internet by reducing the number of fraudulent registered domain names.

#### *Chargebacks*

One of the main focuses of e-commerce up until recently has been related to secure payments. Chargebacks is a remedy used to reverse transactions made with credit or debit cards when a fraudulent use has occurred, or when there is a violation of the contract terms. This method is very popular among online consumers since this is the main mechanism to transfer money online. In addition, consumers are not required to give evidence to cancel a payment. The vendor has the burden of proving that the merchandise or service was given according to the contract terms. Once this is proved the bank makes effective the payment to the vendor. Chargebacks are largely used around the world by banks and the main credit card suppliers i.e. Visa, MasterCard and American Express. Yet, the coverage of debit and credit cards varies considerably amongst different countries. Commonly, debit cardholders have fewer protections than credit card holders, but it also varies depending on the jurisdiction. It is then not surprising why credit cards are the major source of payments for consumers in e-commerce. They provide a remedy that reverses all transactions when a fraudulent use has occurred, or when there is a violation of the contract terms. However this method has limitations; it offers one single remedy (the return of the payment), and not all disputes imply a breach of contract or fraud. Similarly, Online Payment Providers, like PayPal.com, retain temporarily the money paid by a buyer when the latter makes a complaint within 45 days after the payment was made. PayPal.com holds the money until the dispute is settled, but only in those cases where the merchandise did not arrive, or the description of the product was significantly different from the product itself. In these circumstances PayPal.com acts akin to an online arbitrator. However, in those circumstances where the seller takes away the money from his account before the buyer makes the claim, PayPal.com will not be responsible for the buyer's loss. Despite this, PayPal is in a very strong position since in most cases it is able to freeze the amount of money and resolve the dispute providing an instant and effective enforcement. Overall, chargebacks intends to balance the inequality of power between consumers and businesses. It is regarded as a very efficient tool for consumers because the speed, accessibility and lack of charge for their clients, who would just have to notify their banks or card issuers to cancel a transaction. Thus, Edwards and Wilson suggested that it would be advisable to focus on developing chargebacks and other soft ODR methods because they are very effective amongst mainstream consumers. By contrast, the existing processes are considered largely inefficient and not transparent among businesses because puts businesses in bad light since the onus of the proof rests on them.

## 5. The future of the Law Profession

Source: Susskind, R., Susskind, D. (2015) *The future of professions – How technology will transform the work of human experts*, Oxford University Press, chapter 2 – section 2.4.

In *Tomorrow's Lawyers*, the authors predict that the legal world will change 'more radically over the next two decades' than 'over the last two centuries'. Numerous commentators have echoed this view of a legal profession on the brink of unprecedented upheaval. In truth, the working practices of lawyers and judges have not changed much since the time of Charles Dickens. The set-up that has endured is fairly similar around the world, whether in support of resolving disputes, advising on transactions, or in counselling clients on their rights and duties. Legal advice is handcrafted by lawyers in partnership, delivered on a one-to-one basis, the output is documentation (often voluminous), and since the mid-1970s charging has generally been on an hourly-billing basis. To sort out their disputes, parties congregate before an impartial arbiter in a purpose-built courtroom where the procedure is formal, the process is steeped in tradition, and the language is largely arcane. Non-lawyers struggle to follow what is going on.

The greatest current pressure on this traditional approach is cost. Dickens himself may have overstated the problem when he referred to legal papers as 'mountains of costly nonsense', but most legal and court services have indeed become unaffordable to their users, from consumers to global businesses. In some countries, such as England and Australia, the legal market has been liberalized, so lawyers no longer have a monopoly over legal work. Nonlawyers can own and run legal businesses, while law firms can float on public stock-exchanges or take in external funding, such as private equity.<sup>134</sup> This is shaking up the consumer market, where research suggests that almost two thirds of individuals would prefer to receive legal help from high-street brands than from conventional law firms.<sup>135</sup> The Co-Op Bank in England has said that it will offer legal services from around 350 of its bank branches, while other well-known non-legal businesses, like BT, the telecommunications company, and the AA, the motoring association, have also committed to providing a range of everyday legal services. The solo lawyer is under threat. In business law, new providers have entered the fray—legal process outsourcers like Integreon and Novus Law, legal publishers such as Thomson Reuters, and a rash of 'alternative business structures'. The last group, authorized in England and Wales under the Legal Services Act 2007, is well exemplified by Riverview Law, who are able to employ and deploy qualified lawyers at fixed fees and at lower cost than conventional firms. Another growing line of legal trade is networks of freelance lawyers. Axiom led the way here, launching in 2000.<sup>140</sup> Since then, various law firms have followed suit, offering access, largely to their alumni, on a contract basis—for example, Berwin Leighton Paisner's 'Lawyers on Demand' and Pinsent Masons' 'Vario'.

More generally, larger firms are responding to cost pressure by establishing a new division of labour. Lawyers are breaking down legal work into more basic tasks, and finding alternative ways of sourcing the more routine and repetitive work, such as document review in litigation, due diligence work, routine contract drafting, and rudimentary legal research. Legal tasks in this way are now being outsourced, offshored, passed along to paralegals, subcontracted, and sold to clients on a fixed-price basis. Some leading firms are setting up their own low-cost service facilities.

There are moves also towards a new discipline—legal risk management— where the spirit is dispute avoidance rather than dispute resolution, and towards multi-disciplinary practice, where lawyers work alongside accountants, consultants, and tax specialists in providing an integrated professional service. Technology is playing a central role in the transformation of the legal profession. Aside from heavily used back-office systems (especially e-mail, accounting, and word processing), and well-established legal research tools (such as Westlaw and LexisNexis), a variety of emerging systems are systematizing and sometimes changing the way that lawyers work. One key category of system computerizes the production of legal documents. These 'document assembly systems'—built using tools like ContractExpress and Exari—can generate high-quality documents after straightforward interactive consultations with users. Originally these were used only to help lawyers. Now similar systems are becoming available online for lay users. Other document services are also available—for example, Docracy, which holds an open collection of legal agreements, and Shake, an app that helps create legal contracts on hand-held devices.



Legal help is also available online. Legislation and case law can be accessed at no cost in many jurisdictions (thanks in large part to the pioneering work of the Australasian Legal Information Institute), although non-lawyers usually find it more helpful to dip into the huge range of state-provided and charity-led websites that offer practical, jargon-free guidance on numerous areas of law. Commercially available online legal services, such as LegalZoom and Rocket Lawyer, are also taking hold, while there are a few more sophisticated diagnostic expert systems, which tackle highly complex, multi-jurisdictional legal questions and can outperform the best specialists—the international law firm Allen & Overy has a suite of these services, while much newer legal businesses, such as Neota Logic, are delivering systems that model complex rules and reasoning processes. Online deal rooms and case rooms are increasingly shared between law firms and their clients. These are Internet-based platforms for collaboration, where the documents relating to deals and disputes can easily be stored and retrieved.

In preparation for litigation, intelligent search systems can now outperform junior lawyers and paralegals in reviewing large sets of documents and selecting the most relevant, while Big Data techniques are underpinning systems that are better than expert litigators in predicting the results of court decisions, from patent disputes (the Lex Machina service) to the US Supreme Court. Similar technologies, such as Kira and eBrevia, are being used by corporate lawyers for due diligence work.

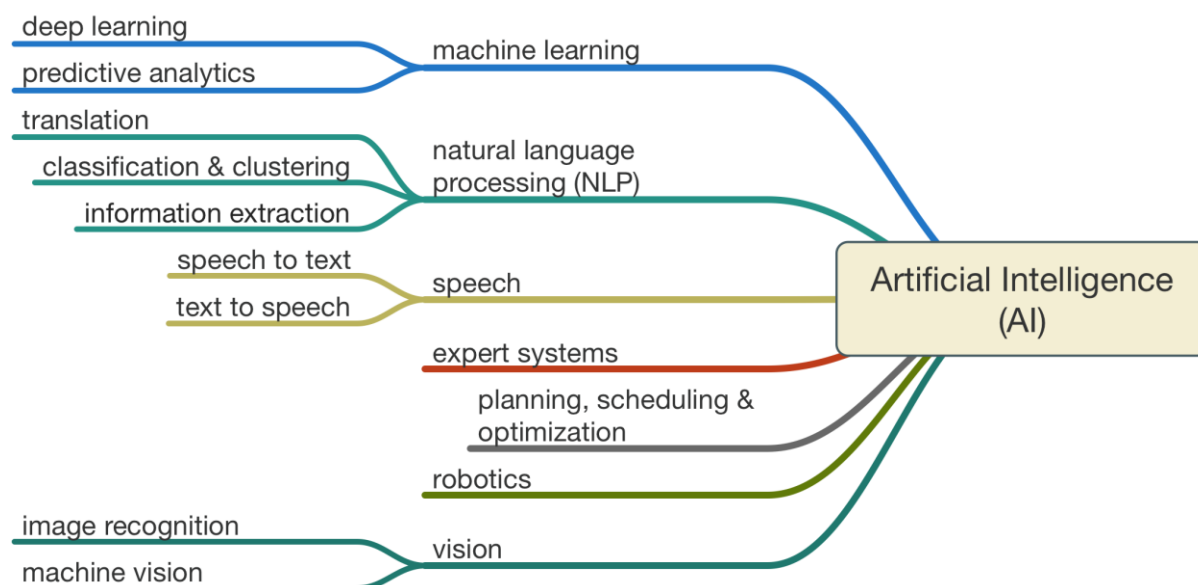
Fundamental challenges to the courts are also being launched. Legal technologists are asking whether court is a service or a place; whether people and organizations in dispute really need to congregate in physical courtrooms to settle their differences. One alternative is the virtual court. Already used for vulnerable witnesses to give evidence or for preliminary hearings in criminal cases, this is a conventional courtroom set-up in which participation—by lawyers, parties, or witnesses—is via some kind of video link. Another alternative is online dispute resolution (ODR), recent proposals for which in England and Wales were welcomed by the Master of the Rolls, the top civil judge, as ‘an exciting milestone in the history of our civil justice system’. Here, the process of resolving a dispute, especially the formulation of the solution, is conducted across the Internet—from quarrels amongst citizens to conflicts between individuals and the state. One example is ‘e-adjudication’, one of various ODR techniques that are used to sort out a staggering 60 million disagreements that arise amongst traders each year amongst eBay users (more than three times the total number of lawsuits filed in the entire US court system). This is based on a widely available platform for ODR, known as Modria. Another is Cybersettle, a web-based ‘e-negotiation’ system that handled over 200,000 personal-injury and insurance claims of a combined value of almost \$2 billion. Yet another is Resolver, a free web service that helps UK consumers pursue their grievances with over 2,000 organizations.

Online legal communities are emerging. Legal OnRamp originally led the way here for major law firms and their clients, while non-lawyers too are beginning to contribute, sharing their practical experiences of resolving legal problems in what we call ‘communities of legal experience’. In another direction, interest is developing in embedding legal requirements into our social and working lives, so that, for example, automatic compliance with health-and-safety regulations can be integrated into the design of buildings that can identify and respond when temperature levels are above some statutory level. In this way, human beings do not need to know the law and make a conscious decision to comply, and consequently, lawyers’ direct involvement is not needed. Even when lawyers are being used, their selection is no longer by word of mouth. Instead, there are online reputation systems where clients can pass along their views on particular practitioners (Avvo, for example, has reviews of almost 200,000 US attorneys), price-comparison systems (for both hourly rates and on a project basis), and web services, such as Priori Legal, which locate suitable lawyers for users.

Online auctions for the selection of legal advisers have been in operation for over a decade. Looking to the longer term, then, the future of legal services is unlikely to look like John Grisham or Rumpole of the Bailey. More probably, our research suggests that traditional lawyers will in large part be ‘replaced by advanced systems, or by less costly workers supported by technology or standard processes, or by lay people armed with online self-help tools’.

## 6. Artificial Intelligence in Law

AI is a big forest of academic and commercial work around “the science and engineering of making intelligent machines,” The field has many branches, with many significant connections and commonalities among them. The most active today are shown here:



Lawyers do not need robots or machine vision, but other branches of AI are indeed useful. Practical use of cognitive technologies in legal services is by no means new, nor did it begin when IBM Watson won Jeopardy! or when IBM’s general counsel predicted that Watson could pass the bar exam.

### What’s happening today?

**Legal research**—Lexis and Westlaw have applied natural language processing techniques to legal research for 10+ years. No doubt Bloomberg BNA does as well. After all, the core NLP algorithms have all been published in academic journals and are readily available. The hard (very hard) work is practical implementation against good data at scale. Legal research innovators like Fastcase and RavelLaw have done that hard work, and added visualizations to improve the utility of results. This year, ROSS Intelligence has been applying IBM Watson’s Q&A technology to legal research on bankruptcy topics, after winning a finalist spot in an IBM Cognitive Computing Competition among 10 universities. After building and training the data set, ROSS invites users to evaluate search results, and feeds those evaluations back to the engine to continue tuning (the essence of machine learning) in the manner of recommendation engines at Netflix and Amazon as well as Google’s feedback loops based on what we do with the search results we are shown.

**Document automation**—HotDocs, Exari, and Contract Express apply procedural rules and some inferencing to generate legal documents. Not fancy, not new, but algorithmic and very useful.

**E-discovery**—Technology-assisted review (“TAR” or predictive coding) uses natural language and machine learning techniques against the gigantic data sets of e-discovery. Recommind, Equivio (now part of Microsoft), Content Analyst, and many other vendors develop or license these tools. TAR has been proven to be faster, better, cheaper, and much more consistent than HPR (Human Powered Review). See, for example, Cormack & Grossman, Evaluation of Machine Learning Protocols. Yes, it is assisted review, in two senses. First, the technology needs to be assisted; it needs to be trained by senior lawyers very knowledgeable about the case. Second, the lawyers are assisted by the technology, and the careful statistical thinking that must be done to use it wisely. Thus, lawyers are not replaced, though they will be fewer in number. In scale and impact on costs, TAR is the success story of machine learning in the law. It would be even bigger but for the slow pace of adoption by both lawyers and their clients.

*Outcome prediction*—Lex Machina, after building a large and fine-grained set of intellectual property case data, uses data mining and predictive analytics techniques to forecast outcomes of IP litigation. Recently, it has extended the range of data it is mining to include court dockets, enabling new forms insight and prediction. For example, the Motion Kickstarter enables: “attorneys [to] view granted motions with denied motions to see what’s working and what’s not. Enter a judge’s name and motion type and instantly view the judge’s recent orders on that motion type, as well as the briefing that led up to those orders.” LexPredict has built models to predict the outcome of Supreme Court cases, at accuracy levels challenging experienced Supreme Court practitioners. Perhaps Huron’s Sky Analytics and the new AIG spinoff, Legal Operations Company, can use their big databases of law firm case and billing data to offer outcome predictions as well as cost and rate benchmarks.

*Self-service compliance*—Neota Logic applies its hybrid reasoning platform, which combines expert systems and other reasoning techniques, including on-demand NLP and machine learning, to provide fact- and context-specific answers to legal, compliance, and policy questions.

ComplianceHR, a joint venture of Littler Mendelson and Neota Logic, offers a suite of Navigator applications to assist human resources professionals in evaluating independent contractor status, overtime exemption and other employment law issues. Foley & Lardner uses expert systems technology to power its Global Risk Solutions service, an “integrated FCPA compliance solution that addresses each of the ‘hallmarks’ of an effective anti-corruption compliance program identified” by the regulatory authorities.

*Contract analysis*—Contract Standards, eBrevia, Kira Systems, LegalSifter, Seal Software, and others apply natural language and machine learning techniques to aspects of the contract lifecycle from discovery to due diligence. General counsel recognize that their high priorities of risk management and cost reduction are served by understanding and managing the rights, obligations, and risks in a company’s contracts, and rationalizing the processes by which contracts are initiated, negotiated, drafted, and managed through their lifecycle from execution to expiration.

*Contract analytics* - is well on the way to being a success story for machine learning in the law. For example, Kira Systems, reports that contract review times in the due diligence context can be reduced by 20–60%. And Contract Standards can benchmark every provision of a draft contract against industry and company or firm standards in moments.

### **Is it time to get in the game?**

Many, perhaps most, law firms choose not to be early adopters of new technologies. Likely, that is not because they have read about the rewards of being a “fast follower” instead of a “first mover.” Rather, they are lawyers—educated to precedent, alert to their peers, wary of failure and hence reluctant to experiment. However, as I hope this quick tour has shown, notwithstanding the chatter and excitement about the arrival of Watson in Law Land, the techniques of cognitive technologies are robustly at work in the trenches of law practice, doing useful work today—improving service to clients, reducing costs, creating new opportunities for firms.

### **The future?**

More, and better, of course. Cognitive technologies in the law are riding a wave of ever-smarter algorithms, infinite scaling of computer power by faster chips and cloud-clustered servers, intense focus by companies led by seasoned experts, and ever-greater demand from clients for cheaper, faster, better services. Note that cheaper is only one of the three words. Faster is important—companies measure cycle time, time to market, and other indicia of speed throughout their businesses, and increasingly expect their lawyers to do the same. And better is critical—big companies face ever-growing regulatory and operational complexity, for which traditional legal services on the medieval master craftsman model are simply inadequate. To meet those needs, only technology-enabled services will do the job. And artificial intelligence is driving those changes.

## 7. Digital technologies and AI impact on lawyering, judging, policing and law enforcement

Nissan, E. (2018) *Digital technologies and artificial intelligence's present and foreseeable impact on lawyering, judging, policing and law enforcement*. *AI & Soc* (2017) 32:441–464, DOI 10.1007/s00146-015-0596-5

**Abstract:** 'AI & Law' research has been around since the 1970s, even though with shifting emphasis. This is an overview of the contributions of digital technologies, both artificial intelligence and non-AI smart tools, to both the legal professions and the police. For example, we briefly consider text mining and case-automated summarization, tools supporting argumentation, tools concerning sentencing based on the technique of case-based reasoning, the role of abductive reasoning, research into applying AI to legal evidence, tools for fighting crime and tools for identification.

**Keywords:** AI & Law, Policing Lawyering, Prosecuting, Sentencing, Argumentation, Legal evidence, Case-based reasoning, Crime scenarios, Fraud detection

Paper online here:

<https://kevincurran.org/lawtech/LawTech%20Module%201%20Notes%20-%20Paper%20Digital%20Technologies%20and%20AI%20impact%20on%20Law.pdf>