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## Smart Contracts: Implications on Liability and Competence

Ryan Hasting

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# Smart Contracts: Implications on Liability and Competence

Ryan Hasting\*

*Smart contracts are increasingly popular in business and law. Smart contracts are also becoming increasingly complex. Advances in technology allow smart contracts to handle far more intricate transactions than the traditional—and simple—vending machine example. With increased complexity comes increased responsibility. When parties rely on an attorney to review or draft a smart contract, that attorney must understand what he or she is reading or writing. Smart contracts, however, are not written in a language most attorneys can understand, let alone write. While a general description of the contract may be translated into plain English, the contract itself is written in code. If an attorney cannot read the contract itself—and can only read a general description of the contract—can the attorney claim in good faith that he or she possesses the competence necessary to understand the terms of the contract? If the attorney cannot understand the contract, he or she can be held liable for malpractice if the contract leads to results contrary to what the attorney claimed could or would occur. The implementation of smart contracts is likely to give rise to specialized requirements for attorneys drafting and advising on smart contracts. Special requirements are not unheard of in the legal community. For example, to become a patent attorney, one must take and pass the Patent Bar Examination and fulfill other requirements, such as obtaining a bachelor's degree in specified fields of science or engineering. Similar requirements—either in the form of a smart contract certification or exam—should be developed not only as a measure of attorney competence, but also as a protection against malpractice suits brought forth by clients.*

I. WHAT IS A SMART CONTRACT?.....	359
II. A PEEK BEHIND THE CURTAIN: HOW DO SMART CONTRACTS WORK?.....	361

III. REAL WORLD IMPLEMENTATION OF SMART CONTRACT TECHNOLOGY.....	363
IV. THE EFFECT OF SMART CONTRACTS ON THE LEGAL WORLD.....	370
A. <i>Competence Under the Model Rules</i> .....	370
B. <i>Are Lawyers “Smart” Enough?</i> .....	373
C. <i>Certify or Face Liability: Who is Responsible When Something Goes Wrong?</i> .....	375
V. THE FUTURE OF LEGAL SMART CONTRACTS .....	377

### I. WHAT IS A SMART CONTRACT?

In order to understand the legal implications of smart contracts, we must first understand what smart contracts are. So, what is a smart contract? Is it a contract involving one of Einstein’s two theories of relativity?<sup>1</sup> Not necessarily. A smart contract, whether it does or does not involve scientific theories, is a digital program stored on blockchain that transfers digital assets between parties when certain conditions have been met.<sup>2</sup> The most basic analogy is to a vending machine, where a product is dispensed once the requisite amount of money has been inserted into the machine.<sup>3</sup> In fact, Nick Szabo, a computer scientist and cryptographer, first conceived the idea of smart contracts in 1993 and described them “as a kind of digital vending machine.”<sup>4</sup> To understand what separates a

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<sup>1</sup> Kevin Hainline, *Relativity: A Short Guide*, DARTMOUTH, <https://www.dartmouth.edu/~kevinhainline/relativity.html> (last visited Apr. 21, 2020) (Einstein’s theory of relativity is split into two subjects: special relativity and general relativity.).

<sup>2</sup> John R. Storino et al., *Decrypting the Ethical Implications of Blockchain Technology*, LEGALTECH NEWS (Nov. 13, 2017, 8:00 AM), <https://www.law.com/legaltechnews/sites/legaltechnews/2017/11/13/decrypting-the-ethical-implications-of-blockchain-technology/>.

<sup>3</sup> *See id.* (“To explain the technology, cryptographer Nick Szabo—who coined the term ‘smart contract’—analogized smart contracts to a vending machine: Vending machines are programmed to transfer ownership of delicious ‘assets’ (i.e., candy bars) once a predetermined amount of money is input.”).

<sup>4</sup> Alyssa Hertig, *How Do Ethereum Smart Contracts Work?*, COINDESK, <https://www.coindesk.com/information/ethereum-smart-contracts-work> (last visited Apr. 21, 2020).

more complex smart contract from a vending machine, we must have at least a basic understanding of what blockchain is and how it works.

Blockchain is an open decentralized database – a distributed ledger. Every participant on the network has a copy of the transaction ledger. Ledger entries are secured by strong cryptography and each transaction must be agreed to by the [majority] of the participants in order to make it into the ledger. This allows for better security, transparency, and trust. Blockchain is a disruptive technology in a sense that it can be used to store any value information like money, goods, property, work, or even votes without the need of a central authority to verify or prove it. The authenticity is verified by the entire community, by everybody who has a copy of the ledger. Cryptography makes sure it is not possible for a single individual or minor group to tamper or forge the ledger records.<sup>5</sup>

Many people associate the term “blockchain” with cryptocurrencies, such as Bitcoin. The technology behind blockchains, however, is applicable to contracts that have nothing to do with cryptocurrencies. At its core, blockchain is no more than a method of record-keeping<sup>6</sup> and has no inherent connection to cryptocurrencies. “While it’s true that blockchain provides the underlying technology that helps cryptocurrency exchanges, the reality is that the potential uses for blockchain are far broader than digital currencies.”<sup>7</sup> Proponents of blockchain equate its significance to the invention of double-entry bookkeeping in Renaissance Italy.<sup>8</sup> Blockchain adds a third level of bookkeeping, “where the third

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<sup>5</sup> Paul Bischoff, *What is Blockchain? 10 Experts Attempt to Explain Blockchain in 150 Words or Less*, COMPARITECH (Mar. 17, 2017), <https://www.comparitech.com/blog/information-security/what-is-blockchain-experts-explain/>.

<sup>6</sup> Angela Walch, *The Path of the Blockchain Lexicon (and the Law)*, 36 REV. OF BANKING & FIN. L. 713, 736 (2017) (“Blockchain technology is at heart a record-keeping technology, and it purports to enable the creation of permanent, unchangeable records.”).

<sup>7</sup> Jerry Cuomo, *Blockchain is Not Bitcoin—It’s Far More*, THE HILL (Feb. 14, 2018, 11:15 AM), <https://thehill.com/opinion/technology/373798-blockchain-is-not-bitcoin-its-far-more>.

<sup>8</sup> Robert Hackett, *Why Big Business is Racing to Build Blockchains*, FORTUNE (Aug. 22, 2017), <http://fortune.com/2017/08/22/bitcoin-ethereum-blockchain-cryptocurrency/>. (“That’s the revolutionary method of tabulating assets and liabilities that emerged in

entry is a verifiable cryptographic receipt of any transaction” initiated along the chain.<sup>9</sup>

## II. A PEEK BEHIND THE CURTAIN: HOW DO SMART CONTRACTS WORK?

In 2005, before Bitcoin was created,<sup>10</sup> Szabo developed the idea of “secure property titles with owner authority,” which explained how a system comparable to blockchain—what Szabo described as “new advances in replicated database technology”—could store a land ownership registry and create “an elaborate framework including concepts such as homesteading, adverse possession and Georgian land tax.”<sup>11</sup> Unfortunately for Szabo, no such system existed in 2005.<sup>12</sup> Now that these systems do exist, individuals and organizations have been working to develop smart contracts that can automate and provide security to both simple and complex transactions. “For example, one might have a treasury contract of the form ‘A can withdraw up to X currency units per day, B can withdraw up to Y per day, A and B together can withdraw anything, and A can shut off B’s ability to withdraw.’”<sup>13</sup> Prior to the advent of smart contracts, such a formula would need to be verified by a centralized authority, such as a banking institution. Utilizing a smart contract, terms can be converted into a programming language and be verified and enforced by a decentralized verification system.<sup>14</sup>

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Renaissance Italy and that, according to some historians, put wind in the sails of capitalism, allowing investors and entrepreneurs to team up in corporations and launch merchant ships beyond the horizon in search of commercial success.”)

<sup>9</sup> *Id.*

<sup>10</sup> Zoë Bernard, *Everything You Need to Know About Bitcoin, its Mysterious Origins, and the Many Alleged Identities of its Creator*, BUSINESS INSIDER (Nov. 10, 2018, 8:00 AM), <https://www.businessinsider.com/bitcoin-history-cryptocurrency-satoshi-nakamoto-2017-12> (explaining that the domain name bitcoin.org was registered in August 2008, and the Bitcoin whitepaper was released in October 2008).

<sup>11</sup> Vitalik Buterin, *A Next-Generation Smart Contract & Decentralized Application Platform*, ETHEREUM (ETH) – WHITEPAPER, at 10 (2017), available at [http://blockchainlab.com/pdf/Ethereum\\_white\\_paper-a\\_next\\_generation\\_smart\\_contract\\_and\\_decentralized\\_application\\_platform-vitalik-buterin.pdf](http://blockchainlab.com/pdf/Ethereum_white_paper-a_next_generation_smart_contract_and_decentralized_application_platform-vitalik-buterin.pdf).

<sup>12</sup> *See id.*

<sup>13</sup> *Id.* at 1.

<sup>14</sup> *See id.* at 13. (“Ethereum does this by building what is essentially the ultimate abstract foundational layer: a blockchain with a built-in Turing-complete programming language,

The system behind smart contracts, that which verifies transactions and enforces the terms of the contract, can be loosely analogized to a Google Doc.<sup>15,16</sup> Anyone with access can review all the transactions within the contract. The system is secure because edits are approved only by a consensus of network members.<sup>17</sup> Unlike traditional contracts which reside in the care of contract stakeholders, smart contracts use “a publicly accessible ledger that relies on a distributed proof system to prevent falsification of records.”<sup>18</sup> Each transaction is verified by multiple parties and added to the public ledger. In order to trick the ledger, a party would need to falsify a transaction and attempt to pass it off as legitimate. Such an event would create a fork, where some parties would continue the legitimate chain of transactions and others may accept and add the fake transaction. Basic blockchain systems are designed to accept the longest ledger chain as legitimate. Thus, the attacker would need to add false transactions to his newly created branch more quickly than legitimate transactions are added to the proper ledger chain.<sup>19</sup> “The majority decision is represented by the longest chain, which has the greatest proof-of-work effort invested in it. If a majority of CPU power is controlled by honest nodes, the honest chain will grow the fastest and outpace any competing chains.”<sup>20</sup> As soon as the honest—i.e., legitimate—chain regains its status as the longest, the probability of which is almost inevitable,<sup>21</sup> the nodes that were working on the falsified

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allowing anyone to write smart contracts and decentralized applications where they can create their own arbitrary rules for ownership, transaction formats and state transition functions.”).

<sup>15</sup> *How to use Google Docs*, GOOGLE, <https://support.google.com/docs/answer/7068618?co=GENIE.Platform%3DDesktop&hl=en> (last visited Apr. 21, 2020) (“Google Docs is an online word processor that lets you create and format documents and work with other people”).

<sup>16</sup> See Storino, *supra* note 2.

<sup>17</sup> See *id.*

<sup>18</sup> Jonathan Bick, *Are 'Smart Contracts' Smart Enough?*, N.J.L.J. (Aug. 14, 2017, 1:21 PM), <https://www.law.com/njlwjournal/almID/1202795405206/>.

<sup>19</sup> SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM 3 (2008), available at <https://bitcoin.org/bitcoin.pdf> (“To modify a past block, an attacker would have to redo the proof-of-work of the block and all blocks after it and then catch up with and surpass the work of the honest nodes.”).

<sup>20</sup> *Id.*

<sup>21</sup> See *id.* (“[T]he probability of a slower attacker catching up diminishes exponentially as subsequent blocks are added.”).

branch will switch back to the legitimate ledger chain.<sup>22</sup> In short, blockchain's ability to prevent falsification is virtually foolproof.

### III. REAL WORLD IMPLEMENTATION OF SMART CONTRACT TECHNOLOGY

While the general public may first have been introduced to smart contracts in the form of Bitcoin and cryptocurrencies, the technology has far surpassed those limited uses and is being utilized in revolutionary ways by almost every industry.<sup>23</sup> In one notable example from the music industry, music streaming company Spotify acquired Mediachain Labs, a blockchain startup company, in order to develop a decentralized database to connect artists and licensing agreements with the songs listened to by Spotify users.<sup>24</sup> This acquisition took place after a licensing dispute over unpaid royalties between Spotify and the National Music Publishers' Association.<sup>25</sup> In the settlement, Spotify agreed to pay over twenty million dollars to music publishers.<sup>26</sup> "Spotify had claimed that it didn't pay out the royalties because it simply didn't have the necessary data to help it figure out whose claims were legitimate, or even how to locate the parties. It said it lacked an authoritative database that covered all existing music rights."<sup>27</sup> The decentralized database being developed by Spotify is essentially a smart contract between artists, streaming services, and consumers. The database will utilize peer-to-peer technology to monitor where and when an artist's songs are being played. Once the song is

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<sup>22</sup> See *id.* ("Nodes always consider the longest chain to be the correct one and will keep working on extending it. If two nodes broadcast different versions of the next block simultaneously, some nodes may receive one or the other first. In that case, they work on the first one they received, but save the other branch in case it becomes longer. The tie will be broken when the next proof-of-work is found and one branch becomes longer; the nodes that were working on the other branch will then switch to the longer one.")

<sup>23</sup> See Bernard Marr, *30+ Real Examples of Blockchain Technology in Practice*, FORBES (May 14, 2018, 1:38 AM), <https://www.forbes.com/sites/bernardmarr/2018/05/14/30-real-examples-of-blockchain-technology-in-practice/#755f158e740d>.

<sup>24</sup> *Id.* ("When Spotify acquired blockchain startup Mediachain Labs it was to help develop solutions via a decentralized database to better connect artists and licensing agreements with the tracks on Spotify's service.")

<sup>25</sup> Sarah Perez, *Spotify Acquires Blockchain Startup Mediachain to Solve Music's Attribution Problem*, TECHCRUNCH, <https://techcrunch.com/2017/04/26/spotify-acquires-blockchain-startup-mediachain-to-solve-musics-attribution-problem/> (last visited Apr. 21, 2020).

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

played, it can trigger a payment from the streaming service to the artist. The process is entirely self-executing. There would be no need for Spotify to maintain its own centralized database to monitor music rights and to cross-reference those rights with the songs being streamed through its service. This technology has the potential to protect and enforce artists' rights across the entire spectrum of streaming music services. The National Music Publishers' Association "estimates that as much as 25 percent of the activity on these platforms is unlicensed."<sup>28</sup> The technology, while protecting artists' rights, will also help to protect various streaming services against liability for copyright infringement claims.

As time and technology move forward, we will continue to see different industries utilizing smart contract technology in various ways. Anyone who has ever had the misfortune of purchasing a fraudulent ticket to a music venue or sporting event may have wondered how such a thing could be possible, and what can be done to fix it. A company named GUTS is working to solve that exact problem by using smart contract technology.<sup>29</sup> Through the use of smart tickets, GUTS is able to monitor and verify the movement and ownership of every ticket sold and purchased through its platform, ensuring that no buyer will ever have to wait in line at a venue only to be turned away at the gate.<sup>30</sup>

Another example of an industry implementing and advancing the use of blockchain technology is supply chain and logistics. According to a 2013 report by the World Economic Forum, replacing traditional processes with blockchain can lead to a five percent increase in global GDP, as well as a fifteen percent increase in global trade volume.<sup>31</sup> IBM has begun utilizing IBM Blockchain and TradeLens to increase

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<sup>28</sup> Ben Sisario, *Spotify Reaches Settlement With Publishers in Licensing Dispute*, N.Y. TIMES (Mar. 17, 2016), <https://www.nytimes.com/2016/03/18/business/media/spotify-reaches-settlement-with-publishers-in-licensing-dispute.html>.

<sup>29</sup> See GUTS, <https://guts.tickets/> (last visited Apr. 21, 2020) ("GUTS uses blockchain technology to create a transparent ticketing ecosystem, where disgraceful secondary market prices and ticket fraud are non-existent").

<sup>30</sup> See GUTS, <https://guts.tickets/about-us> (last visited Apr. 21, 2020).

<sup>31</sup> WORLD ECON. F., ENABLING TRADE VALUING GROWTH OPPORTUNITIES 13 (2013), [http://www3.weforum.org/docs/WEF\\_SCT\\_EnablingTrade\\_Report\\_2013.pdf](http://www3.weforum.org/docs/WEF_SCT_EnablingTrade_Report_2013.pdf); see also *Now Arriving: IBM Blockchain for Supply Chain*, IBM, <https://www.ibm.com/blockchain/industries/supply-chain> (last visited Apr. 21, 2020).



efficiency and performance throughout the global logistics community.<sup>32</sup> TradeLens is an “open and neutral blockchain-powered platform built to support global trade” through which various participants in the supply chain utilize a shared ledger to monitor and track the entire logistics process.<sup>33</sup> The technology is not limited to tracking, which could be done through more basic solutions. Rather, the technology “[p]rovides for the seamless, secure sharing of instantaneous, actionable supply chain information and visibility across all parties to trade—encompassing shipping milestones, cargo details, trade documents, customs filings, IoT data from sensor readings, and more.”<sup>34</sup> The use of shared-ledger technology in logistics reduces fragmentation between the involved parties, which reduces costs and avoids unnecessary confusion and delays in the supply chain process.<sup>35</sup> The technology implements smart contracts to automatically distribute and execute business processes such as import and export clearance, adding security and efficiency to the transaction.<sup>36</sup> As with any other blockchain implementation, the “full audit history [is] maintained on the blockchain” and is possessed by every member of the transaction—rather than a central authority—which increases the reliability and security of the process.<sup>37</sup>

Blockchain technology is also being implemented in various industries to provide security and ease-of-mind to consumers. De Beers Group, the mining company responsible for the trades and markets of more than thirty percent of the world’s supply of diamonds, uses a

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<sup>32</sup> *Now Arriving: IBM Blockchain for Supply Chain*, *supra* note 31 (“IBM Blockchain creates solutions that impact all facets of the supply chain, with a particular focus on logistics.”).

<sup>33</sup> *Id.*; *see also Trade Made Easy*, TRADELENS, <https://www.tradelens.com/> (last visited Apr. 21, 2020).

<sup>34</sup> TRADELENS, SOLUTION BRIEF 4 (2020), *available at* <https://cdn2.hubspot.net/hubfs/4989579/TradeLens%20Solution%20Brief:%20Edition%20One.pdf>.

<sup>35</sup> *See id.* at 14 (“The inability to view each participant’s position in the shipping process, along with the various existing systems used for global trade, leads to a reliance on traditional point-to-point communication technologies (i.e., EDI) and manual processes. This makes it very challenging to create end-to-end views of the complex, multi-party, cross-border transactions that make up today’s supply chains.”); *see also id.* at 17 (“The TradeLens blockchain is a shared, immutable ledger that records transactions and assets, both tangible (a shipping container) or intangible (a commercial invoice). Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.”).

<sup>36</sup> *Id.* at 18.

<sup>37</sup> *Id.*

blockchain ledger to track diamonds from the time they are mined until the time they are purchased, providing consumers with confirmation that the diamonds they purchase are authentic and free from conflict.<sup>38</sup> The system “helps to ensure consumer confidence and fill information gaps, enabling people to enjoy the product without any doubts about ethical issues or undisclosed synthetics.”<sup>39</sup> The visibility and accountability provided by the blockchain ledger system will also foster “trust within the industry and enhanc[e] efficiencies across the diamond value chain.”<sup>40</sup>

The food industry presents an interesting example of how blockchain can be used to protect public health and safety and potentially save human lives. In 2017, Walmart and nine other “food giants” teamed up with IBM to implement distributed ledger technology within their food supply chains.<sup>41</sup> The technology allows food distributors to automatically track not only the location of food, but also information “such as temperature and quality of goods, shipment and delivery dates, and safety certificates of facilities.”<sup>42</sup> One of the immediate benefits of possessing all of this information in a decentralized ledger is that investigations into the origins of food-borne illnesses may be reduced from weeks—or months—to mere seconds.<sup>43</sup> For example, in March of 2017, the FDA began investigating a *Salmonella* outbreak of twenty reported cases in three states, three cases involved hospitalization and one resulted in death.<sup>44</sup> The FDA conducted extensive traceback and testing in order to identify the origins of the infected fruits, as well as where the fruits were distributed and purchased.<sup>45</sup> The investigation

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<sup>38</sup> See Marr, *supra* note 23.

<sup>39</sup> *Alrosa Pilots Tracr Platform*, DE BEERS GROUP: COMPANY NEWS (Oct. 29, 2018), <https://www.debeersgroup.com/media/company-news/2018/alrosa-pilots-tracr-platform>.

<sup>40</sup> *Id.*

<sup>41</sup> Robert Hackett, *Walmart and 9 Food Giants Team Up on IBM Blockchain Plans*, FORTUNE (Aug. 22, 2017), <http://fortune.com/2017/08/22/walmart-blockchain-ibm-food-nestle-unilever-tyson-dole/>.

<sup>42</sup> *Id.*

<sup>43</sup> *Id.*

<sup>44</sup> *FDA Investigates Multiple Salmonella Outbreak Strains Linked to Papayas*, U.S. FOOD & DRUG ADMIN. (Nov. 4, 2017), <https://www.fda.gov/Food/RecallsOutbreaksEmergencies/Outbreaks/ucm568097.htm> (“The FDA began investigating the *Salmonella* Anatum outbreak on March 17, 2017. CDC reports 20 cases in 3 states with 5 hospitalizations and 1 death.”).

<sup>45</sup> *Id.*

lasted for almost eight months.<sup>46</sup> A total of 251 people were ultimately found to have been infected.<sup>47</sup> If the shipments had been tracked, monitored, and logged in a distributed ledger, the origins, destinations, dates of shipment, and sales information would have been accessible immediately.

A few months after teaming up with IBM, Frank Yiannas, then-vice president of food safety at Walmart, demonstrated the new system. The following is a journalist's observation of the demonstration:

A few months after the fact, Yiannas repeats a version of the IBM demo for me. He enters a six-digit "lot" number on a web portal. In an instant, the mangoes' identifying details appear on-screen: Mango spears, 10 ounces, "Tommy" variety (a cultivar optimized for transport). The fruit was harvested April 24 from orchards in Oaxaca, in southern Mexico. A day later, the fruit underwent hot-water treatment to exterminate the eggs of potentially invasive insects. On April 27, an importer received the shipment; after a few more days, it passed through Customs and Border Protection, entering a U.S. processing plant where they were sliced on May 1. From there, the mangoes moved to a cold storage facility in Los Angeles (you can pull up a safety inspection certificate with a click of a mouse). Finally, the lot arrived at a Walmart store.<sup>48</sup>

The entire demonstration took about two seconds.<sup>49</sup>

The Massachusetts Institute of Technology has developed a system called MedRec in the hope of revolutionizing the way in which electronic health records are maintained and distributed within the medical community.<sup>50</sup> "Electronic Health Records (EHRs) were never designed to manage the complexities of multi-institutional, lifetime medical records. As patients move between providers, their data becomes scattered across different organizations, losing easy access to past

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<sup>46</sup> *Id.* ("On November 3, 2017, the CDC closed the formal investigation and FDA continues to screen papayas and enforce the standards under IA 99-35.")

<sup>47</sup> *Id.*

<sup>48</sup> Hackett, *supra* note 8.

<sup>49</sup> *Id.*

<sup>50</sup> *What is Medrec?*, MEDREC, <https://medrec.media.mit.edu/> (last visited Apr. 21, 2020).

records.”<sup>51</sup> MedRec uses blockchain technology to encode metadata “which contains, information about ownership, permission and the integrity of the data being requested,” and allows patients to securely access their health information, as well as grant access to any participating healthcare provider—eliminating the hurdle of tracking down and requesting health records from all of the patient’s previous providers.<sup>52</sup> Systems such as this one could be useful not only for simplifying access to patient records, but may also prove essential for providing timely and accurate medical care in emergency situations.

Property and real estate transactions are also beginning to see the benefits of smart contract utilization. For example, traditional escrow services—which can be very costly—may be entirely replaced by smart contracts.<sup>53</sup> A smart contract can hold the purchase funds until all of the programmed requirements and steps in the purchase process have been met, at which point the funds will automatically be released to the seller. This eliminates the need to pay one or two percent of the home’s value to a real estate escrow service.<sup>54</sup> For those individuals who may want the added security provided by the involvement of a neutral third party, “smart contracts can also be multisignature.”<sup>55</sup>

Ubitquity, a business comprised of “pioneers in blockchain real estate,” is attempting to simplify the real estate purchase and sales process by uploading and recording property ownership documents onto a blockchain platform.<sup>56</sup> The company seeks to “help title companies, municipalities, and custom clients benefit from a clean record of ownership, thereby reducing future title search time, and increasing confidence/transparency.”<sup>57</sup> If successfully implemented, the system could not only reduce title search time, but would also reduce the cost of title searches and title insurance. Under our current system, property buyers typically hire a title company to verify the legitimacy of the property title. The title company conducts an in-depth analysis of any

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<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> See Joel Comm, *How Smart Contracts Could Change the Way You Do Business*, FORBES (May 16, 2018, 7:00 AM), <https://www.forbes.com/sites/forbescoachescouncil/2018/05/16/how-smart-contracts-could-change-the-way-you-do-business/#506f21d61288>.

<sup>54</sup> *See id.*

<sup>55</sup> *Id.*

<sup>56</sup> *About UBITQUITY*, UBITQUITY, <http://www.ubitquity.io/about.html> (last visited Apr. 21, 2020).

<sup>57</sup> *Id.*

and all property records “to make sure that the person or company claiming to own the property does, in fact, legally own the property and that no one else could claim full or partial ownership of the property.”<sup>58</sup> Even after the title has been verified, property buyers typically still purchase title insurance, just in case something was missed during the title search and a dispute arises over the ownership of the property—the exact situation title searches are intended to prevent.<sup>59</sup> The fact that “over one-third of all title searches uncover some kind of problem”<sup>60</sup> should indicate that there may be something wrong with our current system of record keeping. If records were to be maintained in a distributed ledger, as companies like Ubitquity hope to do,<sup>61</sup> title searches would become far more effective and efficient, and the property-buying process in general would become more secure. The use of blockchain to modernize property records can be seen around the world. Dubai is working to put its entire land registry on blockchain within the next few years.<sup>62</sup> “The move is part of the ‘Dubai Blockchain Strategy,’ which is to put all government documents on blockchain by 2020.”<sup>63</sup>

Blockchain technology is also being introduced into the notary industry by companies such as Stampery, Stampd, and Blocksign.<sup>64</sup> In 2017, Microsoft teamed up with Stampery to create an add-in for Microsoft Office.<sup>65</sup> The add-in verifies documents by utilizing the

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<sup>58</sup> *What Does a Title Company Do?*, ZILLOW, <https://www.zillow.com/mortgage-learning/title-company/> (last visited Apr. 21, 2020).

<sup>59</sup> *See id.*

<sup>60</sup> *6 Things to Know About Property Titles*, DISCOVER, <https://www.discover.com/home-loans/blog/6-things-know-property-titles> (last visited Apr. 21, 2020).

<sup>61</sup> *See About UBITQUITY*, *supra* note 56.

<sup>62</sup> Jaliz Maldonado, *10 Ways Blockchain Technology Will Change the Legal Industry*, PRACTICEPANTHER, <https://www.practicepanther.com/blog/blockchain-technology-legal-industry/> (last visited Apr. 21, 2020).

<sup>63</sup> *Id.*; *see also Blockchain, SMART DUBAI*, <https://www.smartdubai.ae/initiatives/blockchain> (last visited Apr. 21, 2020) (“Launched by His Highness Sheikh Hamdan, the Dubai Blockchain Strategy, is a result of a collaboration between the Smart Dubai Office and the Dubai Future Foundation to continually explore and evaluate the latest technology innovations that demonstrate an opportunity to deliver more seamless, safe, efficient, and impactful city experiences.”).

<sup>64</sup> Maldonado, *supra* note 62.

<sup>65</sup> *Stampery Blockchain Add-in for Microsoft Office*, MICROSOFT: DEVELOPER BLOG (Apr. 10, 2017), <https://www.microsoft.com/developerblog/2017/04/10/stampery-blockchain-add-microsoft-office/>.

publicly accessible blockchain, eliminating the need to rely on a single centralized entity.<sup>66</sup>

#### IV. THE EFFECT OF SMART CONTRACTS ON THE LEGAL WORLD

While many state legislatures are still struggling to adapt to the introduction of smart contracts into the legal world, Tennessee was one of the first states to adopt a legal definition of smart contracts. The Tennessee statute states:

**47-10-201.** As used in this part:

(1) “Distributed ledger technology” means and distributed ledger protocol and supporting infrastructure, including blockchain, that uses a distributed, decentralized, shared, and replicated ledger, whether it be public or private, permissioned or permissionless, and which may include the use of electronic currencies or electronic tokens as a medium of electronic exchange; and

(2) “Smart contract” means an event-driven computer program, that executes on an electronic, distributed, decentralized, shared, and replicated ledger that is used to automate transactions, including, but not limited to, transactions that:

- (A) Take custody over and instruct transfer of assets on that ledger;
- (B) Create and distribute electronic assets;
- (C) Synchronize information; or
- (D) Manage identity and user access to software applications.<sup>67</sup>

##### *A. Competence Under the Model Rules*

“A lawyer shall provide competent representation to a client. Competent representation requires the legal knowledge, skill, thoroughness and preparation reasonably necessary for the representation.”<sup>68</sup> The comments to Rule 1.1 were amended in 2012 to require specifically that an attorney maintain competence with regard to

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<sup>66</sup> *Id.* (“An alternative to relying on a single entity (commercial, public, government, etc.) to keep such proof of identity safe is to create a hash of the document and send that hash to the publicly accessible blockchain, such as Bitcoin. Once the hash data is present on the public blockchain, the document can’t be changed without invalidating the hash. This approach guarantees both the document’s privacy and the data’s availability for future validation purposes.”).

<sup>67</sup> TENN. CODE ANN. § 47-10-201 (West 2018).

<sup>68</sup> MODEL RULES OF PROF’L CONDUCT r. 1.1 (AM. BAR ASS’N 2018).

“relevant technology.”<sup>69</sup> “While not binding on lawyers, the ABA Model Rules serve as models for the ethics rules in most states.”<sup>70</sup> Moving forward, ignorance will not be an acceptable defense for attorneys who fail to understand the technologies used by clients and other attorneys.<sup>71</sup> “The language of the modified rule was intentionally vague to create space for the duty of technological competence to evolve along with changes in technology.”<sup>72</sup> The challenge presented by a requirement to maintain technological competence is exacerbated by the fact that the rate of technological improvements increases exponentially over time—at least according to Moore’s Law.<sup>73</sup>

To appreciate the power of exponential growth, consider the following thought experiment. Start by imagining an ordinary sheet of paper of unremarkable weight. Now imagine repeatedly folding this sheet in half. After four folds, it will be as thick as a credit card. This is not particularly spectacular. If it could be folded eleven times, it would then be as tall as a can of Diet Coke. This is still not remarkable. After ten more folds, however, it would be taller than Big Ben. After a further ten folds, it would reach into outer space. After twelve more folds, it

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<sup>69</sup> See MODEL RULES OF PROF’L CONDUCT (AM. BAR. ASS’N, AMENDMENT AUG. 2012), *available at* [https://www.americanbar.org/content/dam/aba/administrative/ethics\\_2020/2012\\_0808\\_revised\\_resolution\\_105a\\_as\\_amended.pdf](https://www.americanbar.org/content/dam/aba/administrative/ethics_2020/2012_0808_revised_resolution_105a_as_amended.pdf).

<sup>70</sup> Robert J. Ambrogio, *With New ABA Ethics Rule, There’s No More Hiding From Technology*, MASSBAR ASS’N: LAW. J. (Oct. 2012), <https://www.massbar.org/publications/lawyers-journal/lawyers-journal-article/lawyers-journal-2012-october/with-new-aba-ethics-rule-there-s-no-more-hiding-from-technology>.

<sup>71</sup> Tyler Roberts, *What is a Lawyer’s Duty of Technology Competence?*, NAT’L JURIST: SMARTLAWYER (Feb. 2, 2018, 11:29 AM), <http://www.nationaljurist.com/smartlawyer/what-lawyers-duty-technology-competence> (“While the Model Rules do not require lawyers to be technological experts, all lawyers are required to have at least a basic understanding of the technologies they and their clients use.”).

<sup>72</sup> *Id.*

<sup>73</sup> David L. Chandler, *How to Predict the Progress of Technology*, MIT NEWS (Mar. 6, 2013), <http://news.mit.edu/2013/how-to-predict-the-progress-of-technology-0306> (“Moore’s Law, originally formulated by Intel co-founder Gordon Moore in 1965 to describe the rate of improvement in the power of computer chips . . . has since been generalized as a principle that can be applied to any technology; in its general form, it simply states that rates of improvement will increase exponentially over time.”).

would reach to the moon. And, if you could fold this single piece of paper 100 times, it would create a wad over 8 billion light years in thickness. Growth, that accelerates so quickly, and stretches to these sorts of scale, is very difficult to imagine. But this is what is happening as processing power continues to double. While mathematicians call this ‘exponential growth’, professionals might simply think of it as explosive growth.<sup>74</sup>

Professionals have a tendency to underestimate the potential of future technologies by evaluating them through the lens of today’s technologies.<sup>75</sup> Even if we cannot accurately predict what the future will hold, we must accept that technology will continue to advance. “The least likely future for technology is that our systems will stay as they are today. And yet those who dismiss attempts to predict the future often fall into the trap of assuming there will be no change.”<sup>76</sup>

Given the rate of advancement, maintaining technological competence presents a greater challenge than maintaining competence in other fields of law. Consider, for example, the competence requirements imposed upon a tax attorney. Of course, such an attorney would be required to keep abreast of all major changes in IRS tax rates, but prior to 2017, “the last major change to the U.S. tax rates came about through the Economic Growth and Tax Relief Reconciliation Act of 2001.”<sup>77</sup> In the past ten years alone, we have seen the advent of self-driving cars, tablets, smart watches, wearable augmented reality devices, and multi-use space rockets.<sup>78</sup> Clearly, technology is advancing at a rapid pace. “Fortunately, the [American Bar Association] rule does not require that we all run out and enroll in advanced courses at MIT.”<sup>79</sup> Even those among us who

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<sup>74</sup> RICHARD SUSSKIND & DANIEL SUSSKIND, *THE FUTURE OF THE PROFESSIONS: HOW TECHNOLOGY WILL TRANSFORM THE WORK OF HUMAN EXPERTS* 156 (New York, NY: Oxford UP 2015).

<sup>75</sup> *Id.* at 159.

<sup>76</sup> *Id.* at 154.

<sup>77</sup> *How Often, and How, Do IRS Tax Rates Change?*, FIN. WEB, <https://www.finweb.com/taxes/how-often-and-how-do-irs-tax-rates-change.html> (last visited Apr. 21, 2020).

<sup>78</sup> Ms. Anemone, *20 Inventions From the Last 10 Years to Amaze You!*, ONEDIO (Jan. 24, 2017, 2:29 PM), <https://onedio.co/content/20-inventions-from-the-last-10-years-to-amaze-you-13738>.

<sup>79</sup> Ambrogi, *supra* note 70.



enjoy learning about technology would be hard-pressed to maintain perfectly current technological knowledge. Lawyers must only keep apprised of technological advances relevant to their practice area. The average lawyer will likely never need to know the intricacies of wearable augmented reality devices. But the average lawyer must possess sufficient technological knowledge to know whether or not he *needs* to learn about wearable augmented reality devices. “It is one thing to draw a line in the sand, but it is something else altogether to bury your head in it.”<sup>80</sup>

The increasing prevalence of digital storage and electronic discovery over the past couple of decades provides an excellent example of how technology can force lawyers to adapt. “It is impossible to competently (let alone zealously) represent a client in a matter involving electronically stored information without a better-than-average familiarity with technology.”<sup>81</sup> A lawyer could not draft an effective discovery request without at least a basic understanding of how items are stored digitally. How then could a lawyer possibly draft an effective smart contract without understanding how the transaction will be verified and how the terms will be enforced?

### *B. Are Lawyers “Smart” Enough?*

Smart contracts are written in code, a language foreign to most lawyers.<sup>82</sup> How can an attorney possibly be considered competent if he cannot read the contract he has been hired to advise on? There seem to be two possible solutions: (1) the attorney must utilize a third party who is qualified to understand code to an extent necessary to ensure that the contract will work as intended, or (2) the attorney himself must obtain such knowledge and qualification. For example, imagine a business contract between two parties. One of the parties speaks English, and the other party speaks Chinese. The Chinese-speaking party drafts a contract. The attorney for the English-speaking party would either need to understand Chinese, retain the services of someone who speaks Chinese, or simply accept the Chinese-speaking party’s claims about how the

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<sup>80</sup> *Id.*

<sup>81</sup> *Id.*

<sup>82</sup> Tsui S. Ng, *Blockchain and Beyond: Smart Contracts*, AM. BAR ASS’N (Sep. 28, 2017), [https://www.americanbar.org/groups/business\\_law/publications/blt/2017/09/09\\_ng/](https://www.americanbar.org/groups/business_law/publications/blt/2017/09/09_ng/) (“[S]mart contracts’ are still primarily written in code and not easily readable by the average lawyer.”).

contract functions. Obviously, no competent lawyer would advise a client to sign a contract without first reading it, so option three is thrown out the window. Either the lawyer or someone hired to assist the lawyer must understand the language in which the contract is written. Smart contracts are no different.

Over time, the necessity for hands-on involvement with the creation and administration of smart contracts may diminish. Advances in artificial intelligence will eventually allow computers to mimic—or even replace—the logic and thought processes of humans.<sup>83</sup> Artificial intelligence is being developed along two different pathways.<sup>84</sup> “The first is to codify human knowledge and drop it into a system,” thereby providing the system with a pre-programmed method for approaching, analyzing, and solving problems.<sup>85</sup> The second is “to develop systems that can operate on raw source materials and deliver high performance without having to map out a problem-solving process in advance.”<sup>86</sup> Eventually, artificial intelligence will assist with many of the concerns regarding the self-executing nature of smart contracts and the functional differences between human logic and machine logic. To understand the distinction between human and machine logic, we can use two contract examples. In the first, a contract contains the following provision: “the price of product A is to be determined by calculating the sum of X and Y.” In this example, a machine would have no difficulty calculating the price of product A, and may in fact do so more efficiently and accurately than a human—provided that accurate information for X and Y is accessible by the system. In the second example, imagine a similar contract containing a different provision: “the price of product A may be adjusted by the seller on a monthly basis and must be reasonable in relation to market averages for similar products.” The second example is not easily calculated by a computer. Human assessment is necessary to verify that the price adjustment is reasonable.<sup>87</sup>

For the foreseeable future, attorneys will remain a necessary component of contracts, whether smart or not. “Smart contracts suffer

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<sup>83</sup> SUSSKIND & SUSSKIND, *supra* note 74, at 186.

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

<sup>86</sup> *Id.* (“These would indeed be much more capable systems, and we expect their steady uptake across the professions. Big Data and Watson are promising examples of this approach.”).

<sup>87</sup> If computer algorithms were capable of accurately determining what is “reasonable,” the first year of law school would have been much, much simpler.

from what is termed the ‘oracle problem.’ This refers to the fact it is extraordinarily difficult to take human reasoning out of the equation.”<sup>88</sup> The list of hypothetical problems that smart contracts will be unable to solve is almost endless. “The smart contract carries out what it is programmed to do, and that’s it. It doesn’t think independently, nor does it provide any reasoned analysis.”<sup>89</sup> This holds true at least until artificial intelligence is capable of providing reasoned analysis. One day, it may be possible for artificial intelligence to draft and monitor smart contracts without the need for lawyers, but we are not at that point yet—and honestly, we may never *want* to be at that point.<sup>90</sup> Contract attorneys can sleep well knowing that, for now, their jobs are safe—unless, of course, they are involved in a smart contract that goes wrong. As smart as a contract may be, the attorney may still face liability for complications.

### *C. Certify or Face Liability: Who is Responsible When Something Goes Wrong?*

One of the defining characteristics of smart contracts is their autonomous nature. “After launching a smart contract, the contract runs autonomously in that the developer does not need to actively maintain, monitor, or even be in contact with it.”<sup>91</sup> Although there are various ways in which liability can be applied to an autonomous contract,<sup>92</sup> the

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<sup>88</sup> Gary J. Ross, *Why Lawyers Won’t be Replaced by Smart Contracts*, ABOVE THE L. (Oct. 5, 2017, 7:33 PM), <https://abovethelaw.com/2017/10/why-lawyers-wont-be-replaced-by-smart-contracts/> (“At some point, someone (an ‘oracle’) is going to have to step in and say whether the terms of the contract were fulfilled or not.”).

<sup>89</sup> *Id.* (“For one thing, ‘smart contract’ is a bit of a misnomer. At the ABA Business Law Section annual conference a couple of weeks ago, a panelist referred to a ‘smart contract’ as an ‘automated blockchain transaction’, which is much more accurate.”).

<sup>90</sup> Iria Giuffrida, et al., *A Legal Perspective on the Trials and Tribulations of AI: How Artificial Intelligence, the Internet of Things, Smart Contracts, and Other Technologies Will Affect the Law*, 68 CASE W. RES. L. REV. 747, 760–61 (2018) (“If a computer charged with keeping a sidewalk clean had the capacity to do so, absent programming protections, it might well determine that human beings cause trash and that to keep the sidewalk clean, it should remove all people from the sidewalk.”).

<sup>91</sup> Carla L. Reyes, *Conceptualizing Cryptolaw*, 96 NEB. L. REV. 384, 398 (2017).

<sup>92</sup> See Giuffrida, et al., *supra* note 90, at 763–64. (“There are essentially three ways to address legislatively the liability issues linked to AI. First, AI-enabled devices can be treated as property and therefore be the responsibility of their users, owners, or manufacturers. Second, they could be treated as ‘semi-autonomous beings,’ and fall under a legal regime similar to that of children or

attorney who created or advised on the contract may always face some form of liability, most likely in the form of a malpractice suit, if the contract did not perform as the attorney had promised. The evolution of patent law, however, shows us that client lawsuits may be limited by the fact that smart contract complexity could make it difficult to attribute fault in the event that something goes wrong.<sup>93</sup> It is also possible that the complexity of smart contracts could open up the floodgates to malpractice suits against attorneys.<sup>94</sup> Even if the client does not file suit, the attorney could be held liable for violating the American Bar Association's Model Rules of Professional Conduct,<sup>95</sup> along with any local professional conduct rules. In determining whether a lawyer has provided competent representation to his client, "relevant factors include the relative complexity and specialized nature of the matter, the lawyer's general experience, [and] the lawyer's training and experience in the field in question."<sup>96</sup> Given the technical complexity of smart contracts, it would seem that attorneys have no option other than to obtain "training and experience in the field in question,"<sup>97</sup> or enlist the services of a competent third party.

Of course, enlisting the help of a third party in no way shields an attorney from liability if something goes wrong. Rule 5.3 of the Model Rules of Professional Conduct reads in pertinent part:

With respect to a nonlawyer employed or retained by or associated with a lawyer:

. . .

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persons with mental disabilities, or even one similar to the notion of agency. Third, like corporations, they could be treated as fully autonomous beings.").

<sup>93</sup> A. Samuel Oddi, *Patent Attorney Malpractice: An Oxymoron No More*, 2004 U. ILL. J.L. TECH. & POL'Y 1, 2 (2004) ("Because patent law practice is so technically sophisticated, even to the ordinary attorney, few clients recognize when a patent attorney erred.").

<sup>94</sup> *See id.* at 2, 3 ("On the one edge, complexity may tend to minimize malpractice claims against patent attorneys due to a general lack of understanding of the technology or the law—thus making malpractice difficult to detect and to prove. On the opposite edge, however, technical and legal complexity would seem to multiply the opportunities for patent attorney mistakes.").

<sup>95</sup> MODEL RULES OF PROF'L CONDUCT (AM. BAR ASS'N 2018).

<sup>96</sup> MODEL RULES OF PROF'L CONDUCT r. 1.1 cmt. 1 (AM. BAR ASS'N 2018).

<sup>97</sup> *Id.*

(c) a lawyer shall be responsible for conduct of such a person that would be a violation of the Rules of Professional Conduct if engaged in by a lawyer if:

(1) the lawyer orders or, with the knowledge of the specific conduct, ratifies the conduct involved; or

(2) the lawyer is a partner or has comparable managerial authority in the law firm in which the person is employed, or has direct supervisory authority over the person, and knows of the conduct at a time when its consequences can be avoided or mitigated but fails to take reasonable remedial action.<sup>98</sup>

Even if an attorney were to bring in a third party to create a smart contract, the attorney could be held responsible for the actions of the third party in creating the contract. “The lawyer has a status as an officer of the court, and his relation with his client is fiduciary in the highest degree with consequences that are diametrically opposed to the arm’s length conception of a simple contract.”<sup>99</sup> When an attorney agrees to create or advise on a smart contract, he holds himself out as having the requisite knowledge and skill to do so.<sup>100</sup>

## V. THE FUTURE OF LEGAL SMART CONTRACTS

The legal word has historically been slow to adapt to technological change. There are several theories as to why this is the case. One theory is that the adoption of new technologies opens the doors to potential malpractice suits, so attorneys prefer to play it safe and continue using

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<sup>98</sup> MODEL RULES OF PROF'L CONDUCT r. 5.3 (AM. BAR ASS'N 2018).

<sup>99</sup> Nathan Isaacs, *Liability of the Lawyer for Bad Advice*, 24 CAL. L. REV. 39, 39 (1935).

<sup>100</sup> *Id.* at 41 (“Attorneys are very properly held to the same rule of liability for want of professional skill and diligence in practice, and for erroneous or negligent advice to those who employ them, as are physicians and surgeons, and other persons who hold themselves out to the world as possessing skill and qualification in their respective trades or professions. . . . An attorney who undertakes the management of business committed to his charge thereby impliedly represents that he possesses the skill, and that he will exhibit the diligence, ordinarily possessed and employed by well-informed members of his profession in the conduct of business such as he has undertaken.”) (internal citation omitted).

the methods that are known to work.<sup>101</sup> “It is much easier to do something the way that it has always been done rather than use a new product that appears to be inconsistent with prior workflow with the added potential risk of having to explain to a client, or even worse, a judge that the technology didn’t work as expected.”<sup>102</sup> Another theory is based on a topic that few attorneys, and even fewer clients, enjoy discussing: hourly billing.<sup>103</sup> Most new technologies are designed to make tasks more time efficient, but the hourly billing structure “does not incentivize a lawyer to be more efficient with their time.”<sup>104</sup> As much as attorneys may wish to maintain their billable hours, the market ultimately forces adoption of new technologies. Consider a scenario in which a client has a choice between attorney A, who performs all document review manually, and attorney B, who leverages technology to simplify and expedite the document review process. Assume that both attorneys bill the client in an hourly billing structure. Even if attorney A uses a low-level associate with a lower billable rate to conduct the initial document review, the amount of time necessary to complete the task may be extraordinarily high. So long as the technology utilized by attorney B has a proven track record of reliability, attorney B will always be able to provide the service at a lower rate than attorney A. Not only will attorney B’s services require less time, they will require significantly less human interaction, and may also be more accurate than the human alternative.<sup>105</sup> When faced with these two choices, many clients will rationally choose the less expensive option—especially if it is more accurate and efficient than the alternative. As more and more clients choose the option presented by attorney B, attorney A will either have to adapt to the new technology or be phased out of business.

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<sup>101</sup> Erin Hichman, *Disrupting the Legal Sector Through Technology*, LAW (Jan. 3, 2019, 1:39 PM), <https://www.law.com/2019/01/03/disrupting-the-legal-sector-through-technology/>.

<sup>102</sup> *Id.*

<sup>103</sup> *Id.*

<sup>104</sup> *Id.*

<sup>105</sup> See, e.g., Stephanie Mlot, *AI Beats Human Lawyers at Their Own Game*, GEEK (Feb. 26, 2018, 1:30 PM), <https://www.geek.com/tech/ai-beats-human-lawyers-at-their-own-game-1732154/> (“LawGeex pitted 20 experienced attorneys against a three-year-old algorithm trained to evaluate contracts. . . . In the end, LawGeex’s neural network achieved an average 94 percent accuracy rate, compared to the lawyers’ average of 85 percent. And while it took humans anywhere from 51 minutes to more than 2.5 hours to complete all five NDAs, the AI engine finished in 26 seconds.”).

There was a time when e-mail and cellphones were considered too risky to use as a method of communication with clients.<sup>106</sup> “The advent of computers and the communications changes that have come along with them were unimaginable in the early 1980s when a law firm partner was heard to exclaim that lawyers did not need computers on their desks because lawyers had no need to type!”<sup>107</sup> It would be fair to say that lawyers have struggled to keep pace with technology.<sup>108</sup> But they do eventually catch on.

E-mail and cellphones were once considered new and confusing technology but have since become ubiquitous throughout our daily lives. Similarly, smart contracts will transition from science fiction into daily reality. The change, especially given the rate at which it is happening, may seem alarming. “Yet, despite how disconcerting change may be, it brings with it opportunity and the promise of the future. Thus, in the midst of change, the legal profession has no choice but to embrace innovation and move forward with society.”<sup>109</sup> A necessary component of this embrace is for attorneys to *understand* smart contracts if they wish to utilize or advise on them. There are similarities between the future of smart contract law and the past of patent law. The complexity and scientific nature of patents led to the creation of the United States Patent and Trademark Office Registration Examination—commonly referred to as the Patent Bar—which an attorney must pass to engage in patent prosecution, “the process of procuring patent rights for new inventions.”<sup>110</sup> By requiring—and testing for—a specified level of

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<sup>106</sup> See, e.g., Iowa Ethics Op. 97-01 (1997) (counsel must obtain written consent from the client before transmitting any sensitive material on e-mail); see, e.g., Ill. Ethics Op. 90-07 (1990) (lawyers should not use cordless or other mobile phones when discussing confidential client matters).

<sup>107</sup> Grace M. Giesel, *The Attorney-Client Relationship in the Age of Technology*, 32 MISS. C. L. REV. 319, 320 (2013).

<sup>108</sup> JAN L. JACOBOWITZ & JOHN G. BROWNING, LEGAL ETHICS AND SOCIAL MEDIA 239 (A.B.A. 2017) (The legal profession is one that “is traditional in nature and that thrives on established rules and regulations. So, it is no wonder that lawyers have been challenged by the digital age.”).

<sup>109</sup> *Id.*

<sup>110</sup> Holly Chamberlain & Ethan Rubin, *The Patent Bar: What it is and What it Means for You*, B.C.L., <https://bcipf.org/2013/11/the-patent-bar-what-it-is-and-what-it-means-for-you/> (last visited Apr. 21, 2020) (“The patent bar exam exists for reasons very practical to the practice of patent law. It is in the best interests of both inventors and the United States Patent and Trademark Office (USPTO) that patent applications are written by a competent lawyer or patent agent.”).

knowledge of patent law, the patent bar protects clients and maintains efficiency in the patent application process.<sup>111</sup>

There is an argument to be made that the requirement for attorneys to understand the intricacies of smart contracts might be no greater than the need for an attorney to understand the intricacies of email servers when communicating with clients.<sup>112</sup> That argument, however, falls short for various reasons. The most likely issue arising out of the misuse of email is that confidential information may be exposed to the public, or at least to a party not meant to receive it. If such an unfortunate event were to occur, the attorney may be found to have violated his professional obligations under the Model Rules of Professional Conduct.<sup>113</sup> Rule 1.6(c) states that “[a] lawyer shall make reasonable efforts to prevent the inadvertent or unauthorized disclosure of, or unauthorized access to, information relating to the representation of a client.”<sup>114</sup> If the lawyer violates this rule, a client could potentially pursue a malpractice suit against the lawyer. When it comes to smart contracts, however, a client’s ability to pursue remedies is unclear.

If one of the parties to a basic contract does not perform according to the terms of the contract, then the solution is obvious: bring a claim for breach of contract. In a basic contract, the contract is merely a manifestation of the agreement between parties. The contract itself does not *do* anything. Smart contracts are changing the way we understand contract performance. Never before in the history of law have we faced a situation where the contract itself—rather than the parties—might not perform. If neither party is responsible for the breach of contract, who is to be held responsible? The likely answer: whoever was responsible for creating or reviewing the contract.

Given the increasing complexity of smart contracts, attorneys should be required to obtain certification in the field of smart contract formation and utilization before engaging in any work involving smart contracts. Failure to do so will expose attorneys to liability to clients under potential malpractice suits and to the Bar Association as a failure to comply with competence requirements. As smart contracts continue to evolve into more complex and capable instruments, the need for a

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<sup>111</sup> *Id.*

<sup>112</sup> See *How Does Email Work? A Simple (Illustrated) Explanation*, VISION DESIGN GROUP (Feb. 24, 2010), <https://www.visiondesign.com/how-does-email-work-a-simple-illustrated-explanation/>.

<sup>113</sup> See MODEL RULES OF PROF'L CONDUCT r. 1.6 (AM. BAR ASS'N 2018).

<sup>114</sup> *Id.*



specialized subset of qualified lawyers will inevitably emerge. In order to identify such a subset, certain qualifications—and some form of registration examination—will likely be developed. Just as lawyers with no scientific background are considered to lack competence with regard to patents, lawyers with no background in coding or computer science may be considered to lack competence with regard to drafting or advising on smart contracts.