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Blockchain Challenges Traditional Contract Law: Just How Smart Are Smart Contracts?

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Blockchain Challenges Traditional Contract Law:
Just How Smart Are Smart Contracts?

Morgan N. Temte*

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The blockchain cannot be described just as a revolution. It is a
 tsunami-like phenomenon, slowly advancing and gradually envel
 oping everything along its way by the force of its progression.1

I. INTRODUCTION

Blockchain is a ten-year-old technology inducing massive changes in
industries all over the world.2 It fills many niches in high-tech firms, paving the

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1 WILLIAM MOUGAYAR, THE BUSINESS BLOCKCHAIN: PROMISE, PRACTICE, AND APPLICATION OF
   THE NEXT INTERNET TECHNOLOGY 17 (John Wiley & Sons, Inc. eds., 2016).

2 See Alan Cohn et al., Smart After All: Blockchain, Smart Contracts, Parametric Insurance,
   and Smart Energy Grids, 1 GEO. L. TECH. REV. 273, 274 (2017); John R. Storino et al., Decrypting
   the Ethical Implications of Blockchain Technology, LEGALTECH NEWS 1, 1 (Nov. 13, 2017), https://
   jenner.com/system/assets/publications/17556/original/Storino%20Steffen%20Gordon%20
   LegalTech%20Nov%202013%202017.pdf.
way for better record-keeping and maintenance of insurance policies, contracts, financial ledgers, and more.9 The legal industry has also found ways to implement blockchain technology as it serves as a medium for “smart contracts”—contracts that self-execute once the parties meet agreed-upon conditions.4 Under prior frameworks, smart contracts merely simplified traditional contract execution, but the unprecedented incorporation of blockchain technology into legal contracts generates many new questions about the application of existing legal doctrines.5

Wyoming has been at the forefront of proactively addressing many of these questions.6 In 2018, the Wyoming State Legislature passed blockchain legislation.7 As a result, many blockchain companies expressed interest to local business people about incorporating in the state.8 With the addition of blockchain technology in Wyoming, it is crucial to address the potential challenges, especially how users are to apply existing legal doctrines to new tools that operate using blockchain technology.9

This Comment examines the innovative legal qualities of blockchain smart contracts and their corresponding challenges.10 Part II provides a brief background on blockchain technology and Wyoming’s role in regulating the new technology.11 Part III discusses the evolution of smart contracts and their adaptation

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3 See Cohn et al., supra note 2, at 273, 277–80, 290–92.


8 See Bain, supra note 6. For example, David Pope, an accountant and Executive Director of Wyoming Blockchain Coalition, was contacted by over a dozen blockchain companies looking to register in the state. Id. James Row, a registered broker for more than two decades who worked with the Wyoming Blockchain Coalition, filed paperwork for a new blockchain finance company in Wyoming immediately after the law changed. Id. Row is considering moving at least a few of his eleven other businesses currently registered in Delaware to Wyoming, including some in finance and energy. Id.

9 See James A. Cox, Introduction to Blockchain Technology, in BLOCKCHAIN FOR BUSINESS LAWYERS, supra note 6, at 1.

10 See infra notes 150–239 and accompanying text.

11 See infra notes 18–56 and accompanying text.
to blockchain technology.\textsuperscript{12} This section further introduces some of the benefits and drawbacks of smart contracts.\textsuperscript{13} Part IV provides an in-depth analysis of the legal issues that will likely arise with this new form of contract, including the application of traditional contract law principles, the potential for unauthorized practice of law, jurisdictional challenges in drafting and enforcing smart contracts, and concerns regarding the potential liability for errors in smart contracts.\textsuperscript{14} Part V briefly examines Wyoming’s recent legislation and assesses potential future regulation of smart contracts.\textsuperscript{15} This section concludes by recommending that the Wyoming Legislature (Legislature) pass a legislative finding to show that Wyoming’s existing legal structure already consents to the use of smart contracts.\textsuperscript{16} The recommendation also urges the Legislature to refrain from passing specific legislation that would restrict the industry before it creates its own standards and before the courts speak to the enforceability of smart contracts.\textsuperscript{17}

II. BACKGROUND

A. What is Blockchain?

Cryptocurrency is a “digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, and which operate independently of a central bank.”\textsuperscript{18} Blockchain is the trading medium of cryptocurrency, the most popular being Bitcoin.\textsuperscript{19} Satoshi Nakamoto, a pseudonymous and publicly-unknown author, created Bitcoin.\textsuperscript{20} Mr. Nakamoto introduced cryptocurrency in 2008, along with the platform on which it operates, known today as blockchain technology.\textsuperscript{21} Blockchain

\begin{itemize}
  \item \textsuperscript{12} See infra notes 57–149 and accompanying text.
  \item \textsuperscript{13} See infra notes 90–125 and accompanying text.
  \item \textsuperscript{14} See infra notes 150–239 and accompanying text.
  \item \textsuperscript{16} See infra notes 260–62 and accompanying text.
  \item \textsuperscript{17} See infra notes 267–76 and accompanying text.
  \item \textsuperscript{19} See Tsui S. Ng, Blockchain and Beyond: Smart Contracts, A.B.A. Bus. L. Today (Sept. 2017), https://www.americanbar.org/groups/business_law/publications/blt/2017/09/09_ng.html. Although a deep examination of cryptocurrency is beyond the scope of this Comment, a brief overview of the emerging technology is provided for background. See infra notes 21–25 and accompanying text. For a more in-depth discussion of cryptocurrency, see Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, 1–8 (2008), https://bitcoin.org/bitcoin.pdf.
  \item \textsuperscript{20} Cox, supra note 9, at 1–2.
  \item \textsuperscript{21} Id.
technology commenced as a means of operating cryptocurrency transactions.\textsuperscript{22} A cryptocurrency blockchain encodes debits and credits to cryptocurrency accounts and stores them as transactions “in blocks.”\textsuperscript{23} Contrary to centralized record-keeping systems, each node in the system evaluates the transaction and maintains its own ledger of all transactions in a decentralized form.\textsuperscript{24} The decentralized ledger system reduces the risk of hacking and altering information, since a majority of the nodes must verify a change in data for the ledger to legitimatize the alteration.\textsuperscript{25}

Beyond cryptocurrency, dozens of industries use blockchain because of its potential to revolutionize day-to-day activities and record-keeping.\textsuperscript{26} The decentralized blockchain ledger allows multiple nodes to keep identical records of given transactions.\textsuperscript{27} This decentralized record-keeping system creates a system of extreme transparency that eliminates the need for a third party, solves double-spending problems, and is more resistant to hackers.\textsuperscript{28} Businesses use blockchain ledgers to track and maintain financial records, insurance claims, or unambiguous contracts.\textsuperscript{29} Media and entertainment companies might benefit from a blockchain ledger used to reduce online music theft and ticket fraud.\textsuperscript{30} Implementation of blockchain will improve travel efficiency and reduce duplicity for travel agencies.\textsuperscript{31} Blockchain also has potential to transform the healthcare industry by capturing clinical data more efficiently.\textsuperscript{32}

\begin{itemize}
\item \textsuperscript{22} See Raskin, supra note 5, at 317.
\item \textsuperscript{23} See id. at 318.
\item \textsuperscript{24} See, e.g., J. Travis Laster & Marcel T. Rosner, Distributed Stock Ledgers and Delaware Law, 73 Bus. L. 319, 321 (2018) (defining a node as a computer on the network which keeps its own copy of the ledger); Cox, supra note 9, at 2, 6.
\item \textsuperscript{25} Laster & Rosner, supra note 24, at 325 (explaining how the peer-to-peer system comprised of nodes makes the blockchain reliable and secure); see Raskin, supra note 5, at 318 (“A block is verified by a large number of computers in a network, called nodes, and then tacked on to the previously verified blocks. This chain of data blocks is known as a blockchain.”).
\item \textsuperscript{26} See infra notes 29–32 and accompanying text.
\item \textsuperscript{27} See Storino et al, supra note 2, at 1–2.
\item \textsuperscript{28} See Cox, supra note 9, at 2.
\item \textsuperscript{29} See Rewire Your Industry with IBM Blockchain, IBM, https://www.ibm.com/blockchain/industries (last visited Nov. 12, 2018).
\item \textsuperscript{32} Devon S. Connor-Green, Blockchain in Healthcare Data, 21 U.S.F. INTELL. PROP. & TECH L. J. 93, 98 (2017).
\end{itemize}
Because of its novelty, courts are still in the beginning stages of adjudicating blockchain and the various tools that operate using the new technology. Since blockchain is still emerging in the legal world, state legislatures hold a paramount task of drafting and enacting new legislation that will offer the courts guidance on how to treat blockchain. States are making policy choices in hopes of attracting economic growth by creating a competitive edge in drawing business over competing states. Though many states are setting new policies, there has yet to be a consensus on the right way to regulate the modern technology. Many states, including Wyoming, have created blockchain task forces and initiatives to explore how blockchain can help spur economic development.

B. Blockchain’s Importance to Wyoming

Many recognize Wyoming as an illustrious state to start a new enterprise because of its low taxes and corporate-friendly laws. As the first state to recognize limited liability companies, Wyoming has long enjoyed a reputation as a state attentive to business needs. Wyoming’s capability for accommodating blockchain technology is no concession to its other business incentives. In addition to having a business-minded environment, Wyoming ranks high in the nation for

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33 Many cases that discuss blockchain technology are specifically concerned with companies that operate with cryptocurrency, fighting for trademark rights and injunctions against similar companies. See Alibaba Grp. Holding Ltd. v. Alibabacoin Found., No. 18-CV-2897 (JPO), 2018 WL 2022626, at 7 (S.D.N.Y. Apr. 30, 2018); Telegram Messenger, Inc. v. Lantah, LLC, No. 18-cv-02811 (CRB), 2018 WL 3753748, at 2 (N.D. Cal. Aug. 8, 2018). Some of these courts are left with equivocal options for how to treat virtual currency until Congress speaks on the matter. See, e.g., CFTC v. McDonnell, 287 F. Supp. 3d 213, 220–21 (E.D.N.Y. 2018).


35 Lyle et al., supra note 6, at 185.

36 See id. at 185–86. Wyoming, Arizona, and Delaware have embraced the opportunity for economic growth by enacting legislation that intends to attract blockchain technology. Id. On the other hand, New York, has enacted heavy regulatory requirements on virtual currency that create a strong compliance component. Id. Meanwhile, many states have been completely silent on the issue altogether; for example, California passed “wait-and-see” legislation. Id.

37 See id. at 202–13 (explaining how Delaware, Illinois, Vermont, Arizona, and Wyoming have all created some form of an initiative or task force, or both).

38 See Matthew D. Kaufman et al., Crowdfunding Comes to Wyoming, Wyo. Law., Aug. 2017, at 44.

39 Id.

energy production. Availability of affordable energy is a critical consideration for blockchain companies, as transactions using blockchain require high levels of energy. There are also energy companies in Wyoming willing to implement different blockchain pricing structures in an attempt to attract blockchain entities to Wyoming.

Enacting regulatory legislation will incentivize companies who use blockchain technology to incorporate in Wyoming. Though a new regulatory structure might propel some companies to incorporate in the state without a physical presence, policymakers are confident “registration and filing fees alone [will] bring loads of fresh cash into the state.” But records indicate that many blockchain companies are already choosing Wyoming as their physical domicile.


43 See Suttles, supra note 42.

44 See, e.g., Bain, supra note 6 (explaining how Charles Dusek, co-founder of Node Haven, a startup hoping to raise as much as $50 million in an initial coin offering, registered in Wyoming in mid-April to take advantage of the new tax incentives); Rosenfeld & Richards, supra note 40 (explaining how Wyoming should provide a beneficial regulatory environment to blockchain companies to see growth in the state).

45 Bain, supra note 6.

Policymakers believe Wyoming’s prosperity in this lucrative market hinges on the regulatory environment it provides.47

Aside from enacting blockchain-related legislation, Wyoming has been proactive in inviting blockchain technology to the state in other ways.48 Wyoming organized a Blockchain Coalition (Coalition) to educate citizens about blockchain and spur new business in Wyoming using the technology.49 The Coalition consists of advisors throughout the state with an interest in inviting blockchain companies to Wyoming, and emphasizes the opportunity Wyoming has to foster a blockchain-friendly environment.50 The Coalition also illustrates specific ways in which Wyoming can use blockchain technology: ranchers and coal producers can certify Wyoming products with ease, healthcare industries can reduce costs by utilizing better data tracking, holders of mineral rights and leases can better track their royalties and severance payments, the government can have easier accessibility of documents and automatic compliance with public-records retention laws, and campaign managers can better show financial transparency of candidates.51

The Wyoming Legislature also formed a Blockchain Task Force (Task Force) to determine the best way to regulate the blockchain industry in the state.52 It is the responsibility of this Task Force to introduce blockchain-related bills for the Legislature’s consideration.53 The Task Force advanced five bills during the 2018

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47 See Rosenfeld & Richards, supra note 40.
48 See Lyle et al., supra note 6, at 185, 189–90.
49 About Us, WYO. BLOCKCHAIN COALITION, http://wyomingblockchain.io/about (last visited Nov. 13, 2018) (“The mission of the Wyoming Blockchain Coalition is to educate Wyoming citizens about the power of blockchain technology to cut costs, streamline administrative processes and spur entirely new businesses in Wyoming”).
50 Id.; Telephone Interview with David Pope, Principal Officer of DACPA, Executive Director of Wyoming Blockchain Coalition (Oct. 11, 2018) (explaining how the Coalition’s goal is to create a block of legislative initiatives that will do more than increase the number of registrations in the state, such as “creat[ing] an ecosystem where the capital that [comes] into the state [will] stay in the state and be utilized within the state”).
52 John Spina, Task Force Setup to Study Cryptocurrency in Wyoming, WYO. TRIB. EAGLE (June 2, 2018) https://www.wyomingnews.com/news/task-force-setup-to-study-cryptocurrency-in-wyoming/article_10f0e5b0-65c3-11e8-a3e8-ab78b1e71b64.html. See generally 2018 Blockchain Task Force, St. WYO. LEGIS., http://www.wyoleg.gov/Committees/2018/S3 (last visited Nov. 13, 2018) (stating that the Task Force is a legislative committee comprised of two state senators appointed by the Senate President, two state representatives appointed by the Speaker of the House, and three non-legislative members appointed by the Governor).
53 See Spina, supra note 52.
Legislative Session, all of which passed. The implementation of blockchain-related legislation forged a competitive advantage and created a regulatory model for other jurisdictions, as some of the legislation was the first of its kind. This new legislation presents Wyoming with an opportunity to regulate blockchain technology in a way that can directly influence how those technologies operate in other states around the country.

III. Smart Contracts

A. Smart Contracts Before Blockchain

A smart contract is “a set of promises, specified in digital form, including protocols within which the parties perform on these promises.” Smart contracts self-execute upon the triggering of pre-determined conditions. A simple vending machine illustrates how a smart contract operates. A vending machine takes in coins and, using a simple mechanism, accurately dispenses the appropriate product and change. Importantly, a party cannot stop the transaction before the vending machine executes the contract completely. The machine cannot return the money once it supplies the product because the software of the machine embeds the terms of the transaction. A smart contract operates in a similar manner: once the software determines that the parties have met the requisite conditions, it automatically executes the contract, acting as a third party, similar to an escrow agent.


55 See Rachel Wolfson, U.S. State of Wyoming Defines Cryptocurrency 'Utility Tokens' As New Asset Class, FORBES (Mar 13, 2018), https://www.forbes.com/sites/rachelwolfson/2018/03/13/u-s-state-of-wyoming-defines-cryptocurrency-utility-tokens-as-new-asset-class/#12b41eda4816 (“It’s very exciting that Wyoming is the first state to define what a utility token is, setting an example of how this could become a standard under federal law. I do believe the Wyoming approach will work under federal securities law and am optimistic the SEC will agree.”).

56 See Lyle et al., supra note 6, at 186. “As Justice Brandeis recognized, . . . a ‘state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.’ The current environment for blockchain and distributed ledger technology may serve as just such a state-law laboratory.” Id. at 186–87.


58 Werbach & Cornell, supra note 57, at 320.

59 Id. at 348.

60 Id.


62 Id.

63 See Cuccuru, supra note 4, at 185 (explaining how a smart contract imitates an escrow arrangement).
Although variations of smart contracts existed in the 1990s, lack of the requisite technology prevented widespread implementation. Prior to blockchain, smart contracts were computer programs which facilitated negotiation and verified and enforced performance on a centralized server. Financial institutions used a form of pre-blockchain smart contracts when they eased bookkeeping transactions and option contracts by implementing computer code. Other examples of these pre-blockchain smart contracts include telecom providers locking phones and vehicle manufacturers incorporating automated speed limitations. General uncertainty and concern from users, combined with issues of identity and transaction verification ultimately hindered the use of smart contracts, however. Blockchain technology confronted these obstructions and has since molded the use of smart contracts.

B. Smart Contracts’ Evolution Post-Blockchain

Once developed, blockchain streamlined the use of smart contracts, serving as its technological framework and providing security and accuracy. With this technology, a network of nodes distributes the smart contract execution. This more sophisticated execution does not depend on any third party to operate because it is autonomous and independent. Consequently, contracts drafted using blockchain are effectively tamper-proof and protect users from the possibility of unilateral change.

Blockchain technology serves as a decentralized ledger that records transactions using different nodes or computers to verify and legitimize transactions. Ethereum is one of the leading blockchain platforms on which smart contracts

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66 Raskin, supra note 5, at 321.
67 De Filippi & Hassan, supra note 65.
69 Werbach & Cornell, supra note 57, at 330.
70 Reggie O’Shields, Smart Contracts: Legal Agreements for the Blockchain, 21 N.C. BANKING INST. 177, 179 (2017) (explaining how smart contracts provide security and accuracy); see also Cuccuru, supra note 4, at 184.
71 See McKinney et al., supra note 68, at 317–18; supra note 24 and accompanying text.
72 See McKinney et al., supra note 68, at 323–25.
73 Id. at 317.
74 See supra notes 24–25 and accompanying text.
operate. Designed specifically for smart contracts, Ethereum is capable of carrying data in the form of arguments—variables which contain data or codes—meaning the users can program the platform to take specific action once parties meet certain conditions.

Coders write the terms of a smart contract in blockchain computer code rather than in English or another traditional language. No individual or program can override or change the ledger. Once the parties meet conditions as stated in the ledger, the contract executes automatically without interjection from a third party. Smart contracts often resemble “if-then” propositions, where, if Party A releases money into the blockchain, then the smart contract will self-execute to meet the obligation laid out in the contract. Smart contracts must collect outside information using an external data feed since smart contracts often rely on facts outside of the blockchain to determine if parties have met their requisite obligations. Oracles are the systems that interpret such external feeds and verify contractual performance. Smart contracts use oracles to collect facts outside of the blockchain to help determine if the parties have met their obligations.

Smart contracts that operate using blockchain technology will likely have a profound influence on various industries. In the legal field, smart contracts can drastically shorten litigation settlement times and mitigate risk for the user. Insurance industries can increase efficiency by implementing smart contracts to automate policy agreements. Governmental entities might improve processes if they used smart contracts to manage title recordings, social services, and e-voting. Further, consumers and utility companies can benefit from smart contract

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75 See Ng, supra note 19.
76 Id. For a more technical discussion on Ethereum and its capabilities, see Werbach & Cornell, supra note 57. See also David Gould, Complete Maya Programming 469 (2003) (“An argument to a command or procedure is simply a value given to the command or procedure as input to perform its operation.”).
77 O’Shields, supra note 70, at 181.
78 See id. at 180; infra notes 110–17 and accompanying text.
79 See O’Shields, supra note 72, at 179.
80 Cohn et al., supra note 2, at 281.
81 Werbach & Cornell, supra note 57, at 336.
82 Id.
83 See id.
84 Ng, supra note 19.
85 Id.
86 Id.
87 Id.
use in automatic bill-paying by debiting an account based on predetermined conditions. In manufacturing, smart contracts can replace slow and expensive supply chain processes.

C. Advantages and Disadvantages of Smart Contracts

Smart contracts have numerous advantages: streamlined business operations, heightened speed and efficiency in business transactions, and low-cost enforcement of contracts. Smart contracts are advantageous because they force parties to honor their original agreements. Smart contracts cause the risk of a breach to be more expensive for the breaching party, nearly eliminating the possibility of a breach. If the cost of litigation offsets the probable value of the contract, ex ante performance is favorable. To return to the vending machine example, “the amount in the till should be less than the cost of breaching the mechanism,” making the cost of breach so high it serves as a deterrent. Avoiding breach altogether reduces the amount parties would spend to oversee enforcement and to litigate a costly dispute.

Smart contracts also have several disadvantages, most of which center on uncontrollability and unregulatability, frequently in the form of understandability, rigidity by code, and rigidity by decentralization. Commentators view understandability as a common problem since smart contracts are most often written in code rather than a common language. Consequently, the average person cannot interpret exactly what the contract says. Rather, the contracting parties are at the mercy of the coded language and the programmers who

88 See Laster & Rosner, supra note 24, at 331.
89 See HANSEN ET AL., supra note 64, at 16–17.
90 O’Shields, supra note 70, at 183.
93 Raskin, supra note 5, at 312. Ex ante means “from before” or “[b]ased on assumption and prediction, on how things appeared beforehand, rather than in hindsight.” BLACK’S LAW DICTIONARY (10th ed. 2014).
94 Szabo, Relationships of Public Networks, supra note 92.
95 Sklaroff, supra note 91, at 275.
96 Cuccuru, supra note 4, at 188–92 (explaining how smart contracts show a radical shift from natural language to code, which raises questions of understandability since the language is only machine-readable).
97 Id. at 188.
98 Id.
drafted it.99 A major question arises in coded language showing up in litigation: whether a court can enforce codable language if the self-execution ends up in litigation.100 Unfortunately, these questions remain unanswered, as courts have not yet addressed an issue about the readability of code in the smart contract.101 One strategy users can employ to address these obscurities is to carefully draft the smart contract to address ambiguities ex ante.102 Though this meticulous drafting will mitigate considerable uncertainties between contracting parties, it is difficult for parties to reduce the entirety of their agreement to fully-defined terms ex ante.103

Another major difficulty of smart contracts for those who intend to contract with flexible terms is the rigidity that code possesses.104 Parties are often willing to include discretionary contract terms for greater flexibility upon execution.105 Smart contracts limit the parties’ discretion because the automated system self-executes the contract.106 The blockchain will automatically execute once parties meet the definitive conditions.107 Because the coding of the smart contract on the blockchain cannot deal with vague or uncertain conditions, smart contracts are more practical when used with concrete rather than abstract conditions.108 Smart contracts generally do not accommodate flexibility and, as a result, are unlikely to replace contracts that necessitate or contain flexible terms.109

Smart contracts possess a high level of immutability, which can serve as a hindrance.110 As explained previously, the decentralized nature of its transactional ledger is a strong advantage of blockchain.111 But this decentralization also has

99 Id.
100 Id. at 189.
101 See Rensel v. Centra Tech, Inc., No. 1:17-CV-24500, 2018 U.S. Dist. LEXIS 100720, (S.D. Fla. Dec. 12, 2017). In Rensel, a Federal Magistrate for the Southern District of Florida accepted a definition of “smart contract,” as “self-executing contracts with the terms of the agreement between buyer and seller being directly written into lines of code. Once a smart contract has been created, computer transaction protocols will execute the terms of a contract automatically based on a set of conditions.” Id. at 26. However, the parties did not dispute the smart contract’s enforceability. Id. at 5–6.
102 See Werbach & Cornell, supra note 57, at 359, 374.
103 Sklaroff, supra note 91, at 280.
104 See Cuccuru, supra note 4, at 189–90.
105 See id.
106 Id.
107 See id.
108 See id.
109 See id.
110 See Dickson C. Chin, Smart Code and Smart Contracts, in Blockchain for Business Lawyers, supra note 6, at 110.
111 See infra note 73 and accompanying text.
drawbacks—the largest being the lack of opportunity for parties to modify once the smart contract executes. The perpetual nature of this technology creates particular concern if the parties mutually agree to alter or reverse the contract. Because of the decentralization feature of the smart contract, users cannot change the smart code once they insert it onto the blockchain. However, this immutability does not mean the parties are completely without recourse. The parties can include a self-destruct feature in the smart code, which will delete the language from the block if the precise address on the blockchain calls for it. While the smart contract can terminate itself, the ability to exercise these actions requires careful planning and drafting.

Hesitant commentators of smart contracts also question the possibility of impeding the execution of a smart contract which a party or third party realizes is fraudulent or illegal. For example, if a smart contract properly executes and releases access keys to pornographic material online, it is unclear what recourse is available. Whether law enforcement or another authority has the ability to stop the automatic trade is unclear. Currently, software developers are trialing prototypes of “permissioned” or private blockchains—hybrid blockchains which address this issue. As the technology develops, rigidity appears less of an issue since the use of recent, more regulated blockchain technology can allow for human intervention to prevent fraudulent or illegal uses of smart contracts.

Blockchain services are likely to remain somewhat uncontrollable, especially with the stronger presence of smart contracts. However, there is a strong advantage in the parties’ inability to intervene in smart contracts. With a smart contract, human intervention is not necessary. When courts and authorities

112 See Cuccuru, supra note 4, at 190.
113 See Chin, supra note 110, at 110.
114 Id. at 111.
115 See id.
116 Id. (explaining how agreements can also require additional conditions to approve a termination). See also generally Introduction to Smart Contracts, SOLIDITY, https://solidity.readthedocs.io/en/v0.4.25/introduction-to-smart-contracts.html (last visited Nov. 14, 2014) (explaining how the only way to remove code from the blockchain is by way of the self-destruct feature).
117 See Chin, supra note 110, at 112.
118 See Cuccuru, supra note 4, at 191.
119 Id.
120 Id. at 192.
121 See id.
122 See id.
123 See supra notes 71–73 and accompanying text.
124 See supra note 72 and accompanying text.
require human intervention to moderate challenges of enforcement, it lessens the anticipated utility of smart contracts.125

D. Smart Contract Examples

In consumer transactions, the use of smart contracts as purchasing agents puts consumers on a more even playing field with those in positions with higher bargaining power, such as corporations.126 A consumer can use a smart contract to negotiate an online transaction with a vendor, creating a situation where smart contracts exchange with each other on behalf of their principals.127 One example of a consumer transaction utilizing a smart contract is a car lease:

Suppose that Bob has a fleet of cars, one of which he wants to lease to Alice. Further suppose that in this world, cars can be operated by a digitally-enabled “key” such as a smartphone app, QR code, or fingerprint, which can be activated and terminated remotely. According to the smart contract, Alice provides down payment to Bob in exchange for use of his car for a set amount of time. Both Alice and Bob have pre-specified a bargaining logic based on their desired terms, such as lease length, interest rate, size of down payment, and car specification. Bob runs a blockchain program that monitors his accounts and inventory, analyzes Alice’s proposed terms, and then autonomously negotiates terms acceptable to both. Alice runs a similar blockchain program that monitors her personal accounts to ensure sufficient funds to pay for the lease. Both applications are authorized to bargain and enter into a smart contract for their respective owners. Once the agreement is formed, Bob’s smart contract discovers Alice’s payment, chooses a car that matches her desired specifications, and instructs that car to accept her digital key.128

A more multifaceted example is the smart contract to buy or sell stocks when a price reaches a certain threshold.129 Not only can a smart contract be told to execute once a price reaches a certain level, it can also contract to execute only

125 Cuccuru, supra note 4, at 192 (explaining how increasing external control over smart contracts downplays the advantages of a decentralized ledger); see also O’Shields, supra note 70, at 190 (“The central idea of a smart contract is that it is self-executing and eliminates the need to resort to human intervention, so some of these challenges in enforcement may reduce the prospective benefits of smart contracts.”).

126 O’Shields, supra note 70, at 182.

127 See id. at 182–83.

128 Sklaroff, supra note 91, at 273–74.

129 Cuccuru, supra note 4, at 185.
if parties meet regulatory compliance conditions.\textsuperscript{130} In a corporate setting, stock ledgers with blockchain capability can also benefit from a smart contract.\textsuperscript{131} Coders can program features of a stock ledger into the smart contract before a corporation releases additional shares.\textsuperscript{132} These features can differentiate between voting rights, payment rights, and other features.\textsuperscript{133} If the corporation decides to issue more shares, the smart contract can require the stock ledger to hold the corporation from issuing shares until it achieves the mandatory vote.\textsuperscript{134}

Another instance of smart contracting is an insurance claim.\textsuperscript{135} Insurance claims take weeks, sometimes months, to process due to the requirement of human “involvement.”\textsuperscript{136} This requirement adds administrative cost and oftentimes litigation expense.\textsuperscript{137} When an insurance company writes its policies in the form of a smart contract, the input conditions change in the case of an insured event.\textsuperscript{138} In the event of a hurricane or other natural disaster, an oracle can input data such as wind speed, location of a hurricane, or magnitude of an earthquake onto the blockchain.\textsuperscript{139} If and when those parameters meet or exceed the pre-arranged limits, the smart contract automatically triggers the claims process and delivers the exact amount of financial payout without human involvement.\textsuperscript{140}

In the modern industry of sports management, athletes utilize traditional contracts and oftentimes employ sports agents to represent their interests in the drafting and contracting process.\textsuperscript{141} Commonly, though, the use of these agents results in additional time and expense, excessive fee charging, and inadequate representation.\textsuperscript{142} The incorporation of smart contracts into the sports industry will both simplify the contract-drafting process and result in fewer contract disputes.\textsuperscript{143} For instance, employment contracts for professional athletes usually

\textsuperscript{130} See Christina Batog, Blockchain: A Proposal to Reform High Frequency Trading Regulation, 33 Cardozo Arts & Ent. L.J. 739, 759 (2015).

\textsuperscript{131} Laster & Rosner, supra note 24, at 331.

\textsuperscript{132} Id.

\textsuperscript{133} Id.

\textsuperscript{134} Id.

\textsuperscript{135} Smart Contracts Application Examples and Use Cases, Draglet, https://www.draglet.com/blockchain-services/smart-contracts/use-cases/ (last visited Nov. 15, 2018).

\textsuperscript{136} Id.

\textsuperscript{137} See id.

\textsuperscript{138} Id.

\textsuperscript{139} Id.

\textsuperscript{140} Id.


\textsuperscript{142} Id. at 93.

\textsuperscript{143} Id. at 95.
require athletes to adhere to conditions associated with making appearances at corporate events and endorsing certain products. These conditions repeatedly lead to disputes about a player not attending a required event, ending in a sponsor suing for breach of contract. With the use of a smart contract, parties can set the number of appearances, time of appearance, payment amount, and endorsements as predetermined conditions that, if met, require payment to the player. The satisfying conditions can combine GPS location information, time-stamps, or social media appearances. The oracle can then comb the internet and verify the data to a level of certainty agreed to in the contract. If the player fails to show up to the required event or fails to meet another requisite condition, the smart contract will not execute and, will therefore not trigger the payment to the player.

IV. LEGAL ISSUES WITH SMART CONTRACTS

A. Application Under Traditional Contract Law

Because of the uniqueness and complexity inherent in smart contracts, it is difficult to discern where and how they fit within the legal frameworks of traditional contract law. Courts and policymakers thus far have not assessed the full potential of smart contracts, making it difficult to place them within a regulatory scheme. As of yet, no court has provided guidance for the enforceability of smart contracts, nor has there been a smart contract market.

145 Id.
146 See id.
147 Id.
149 See Southhurst, supra note 144.
with standardized practices established. The absence of authority and direction causes conflicting views about the enforceability of smart contracts.

Some analysts characterize smart contracts as an alternative to legally enforceable contracts. The presumption in this analysis is that the contracts are not legally enforceable because, once the parties activate the smart contract, the parties have no entitlements beyond those written in code. The code executes robotically without any consideration of other factors. Proponents of this analysis believe that the smart contract does not create obligations in the legal meaning of a contractual obligation. This theory claims that smart contracts are developing in a technical universe not yet touched by the legal realm, similar to the early stages of the Internet. This analysis falls short, because it is unlikely courts and legislatures will allow smart contracts to be out of the reach of the law.

Traditional contracts implicate future performance by creating an obligation for one or more parties. Smart contracts do not create a future obligation, as neither party is legally obligated to take any action after they form the contract. For example, if parties form a smart contract that requires an airline to send its escrowed cryptocurrency to a customer if the airline delays the customer’s flight, neither party has a future obligation to act after formation. If the airline delays the flight, the smart contract will self-execute and send the escrowed money to the party who experienced a delayed flight.

Others contend that smart contracts simply fit into the existing legal doctrines that govern traditional contract law. These proponents believe that the

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152 McKinney et al., supra note 68, at 325.
153 Compare Raskin, supra note 5, at 322 (arguing that smart contracts are straightforward and governed by traditional contract law), with Werbach & Cornell, supra note 57, at 367 (articulating that smart contracts are so succinctly different from traditional contracts that we cannot view them as contracts).
155 Id.
156 Id.
158 Id. at 16.
159 See Raskin, supra note 5, at 340
160 Kolber, supra note 42, at 221.
161 See id.
162 See id.
163 See id.
164 See Raskin, supra note 5, at 340.
new form of contracts is best analyzed under traditional contract law until more smart contract-specific guidance develops. Through this lens, a smart contract fulfills the offer requirement through a posting on the blockchain ledger which occurs in an effort to elicit acceptance. Acceptance and consideration are both confirmed through the act of performance of the self-executing smart contract. If the contract executes, it meets the requisite elements of offer, acceptance, and consideration; if the contract does not execute, there is no legally binding contract, only an offer. Since the smart contract outlines the obligations that it automatically triggers, this theory proposes that smart contracts do not require external interpretation and intervention. Additionally, these proponents generally trust that users intend smart contracts for simplistic transactions that do not compel a high level of flexibility.

The analysis that recognizes smart contracts strictly under traditional contract law is stronger than the assertion that smart contracts are not legally binding for two reasons. First, this analysis recognizes that a smart contract can be analogous to a traditional contract. Second, it recognizes the opportunity to legally enforce smart contracts absent new regulations. However, this theory also limits the potential future use of smart contracts by assuming all smart contracts ought to operate like traditional contracts.

Because of the varying treatment of smart contracts and their legal status, a more legally sound suggestion is to enact regulations specific to smart contracts by means of the coding language used to draft smart contracts themselves. Due to their complex nature, smart contracts require more technical regulation than those currently in place. But instead of policymakers

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165 McKinney et al., supra note 68, at 325–26 (explaining how traditional principles of formation, execution, and enforcement apply to smart contracts).
167 See id. at 11.
168 See id. at 11–12.
169 See id.
170 McKinney et al., supra note 68, at 329.
171 See infra notes 172–73 and accompanying text.
172 See Raskin, supra note 5, at 322.
173 See id. at 306.
174 See Werbach & Cornell, supra note 57, at 348 (“The distinctive aspect of smart contracts is not that they make enforcement easier, it is that they make enforcement unavoidable. In order to do so, they change the nature of the contract itself.”).
175 See De Filippi & Hassan, supra note 65.
176 See Werbach & Cornell, supra note 57, at 377.
writing the regulation, software builders and device producers should express this regulation in the code language they draft, progressively turning law into code.177 Regulatory code would proclaim blockchain as a type of regulatory technology—“a technology that can be used both to define and incorporate legal or contractual provisions into code, and to enforce them irrespectively of whether or not there subsists an underlying legal rule.”178 These technical rules can ensure a court will enforce any smart contract on its technical credibility rather than whether it meets the requirements of a valid contract under the law.179 The coded rules omit the possibility that legal safeguards might invalidate the contract as a result of failure to comply with specific formalities.180

In the last several years, the idea of regulation through code has gained broad interest among analysts, though not all agree with it.181 Opponents worry about the ramifications of using blockchain code to assume conventional legal procedures.182 Similarly, some worry about the overall elimination of a democratic debate, a task necessary for the legislative branch.183 To mitigate these concerns, proponents suggest coding existing law into smart contracts.184 Coders can insert law into a smart contract as parameters that would require the smart contracts to follow existing law in order to execute.185 This idea of “regulatory coding” provides additional regulatory certainty and lowers the costs of supervision and enforcement.186 Regardless of what technical specialists think about the legal standing of smart contracts, however, it is likely that the general principles of contract law will apply to agreements memorialized in code until legislatures or other authoritative bodies say otherwise.187

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177 See De Filippi & Hassan, supra note 65.
178 Id.
179 Id.
180 See id.
182 See id. at 125–26 (explaining that removing the law from smart contracts can mean risks of accountability, transparency, and consumer protection); Usha Rodrigues, Law and the Blockchain, 104 Iowa L. Rev. (forthcoming 2018) (showing how some commentators point to The Decentralized Autonomous Organization (DAO) Hack in 2016 to caution others about limits in using the “code is law” concept).
183 See De Filippi & Hassan, supra note 65.
185 See id.
186 Id. (referring to regulatory coding as a hybrid approach that involves programming existing legal doctrines and rules into smart contract code).
187 See Chin, supra note 110, at 97.
B. Unauthorized Practice of Law

Smart contracts implicate the potential of the unauthorized practice of law. Legal ethics prohibit lawyers from aiding in the unauthorized practice of law. Some authorities have suggested that a non-attorney computer coder preparing a will or contract, or selecting which terms to include in a legal agreement on behalf of a party to the contract, constitutes the unauthorized practice of law.

To determine whether smart contract drafting will create the possibility of coders practicing law without a license, it is important to define what actions constitute the practice of law. The definition of “practice of law” varies by state. Wyoming has carefully defined “practice of law” and thoroughly outlines specific authorized and unauthorized practices through the state’s court rules. Though Wyoming does have a statute prohibiting the unauthorized practice of law, Wyoming case law indicates scarcity of enforcement against wrongdoers.

Wyoming’s court system provides more guidance on the subject in the Rules Governing the Wyoming State Bar and the Unauthorized Practice of Law. Rule 7 specifically authorizes the practice of law and sets out a careful definition of what it means to practice law:

188 See Model Rules of Prof’l Conduct r. 5.5 (Am. Bar Ass’n 2015).
189 The American Bar Association’s Model Rule of Professional Conduct 5.5 restricts the unauthorized practice of law. Id. r. 5.5(a) (“A lawyer shall not practice law in a jurisdiction in violation of the regulation of the legal profession in that jurisdiction, or assist another in doing so.”).
190 Storino et al., supra note 2, at 2.
191 See id; infra note 192 and accompanying text.
192 See Wyo. R. Prof’l Conduct r. 5.5 cmt. 2 (2006) (“The definition of the practice of law is established by law and varies from one jurisdiction to another.”). “Whatever the definition, limiting the practice of law to members of the bar protects the public against rendition of legal services by unqualified persons.” Id. (“This Rule does not prohibit a lawyer from employing the services of paraprofessionals and delegating functions to them, so long as the lawyer supervises the delegated work and retains responsibility for their work . . . “); see also Practice of law, Black’s Law Dictionary, supra note 93 (“The professional work of a lawyer, encompassing a broad range of services such as conducting cases in court, preparing papers necessary to bring about various transactions from conveying land to . . . preparing legal opinions on various points of law, drafting . . . estate-planning documents, and advising clients on legal questions.”) “The term also includes activities that comparatively few lawyers engage in but that require legal expertise, such as drafting legislation and court rules.” Id.
“Practice law” means providing any legal service for any other person, firm or corporation, with or without compensation, or providing professional legal advice or services where there is a client relationship of trust or reliance, including appearing as an advocate in a representative capacity; drafting pleadings or other documents; or performing any act in a representative capacity in connection with a prospective or pending proceeding before any tribunal.196

Rule 7(c) provides for specific exemptions of activities that the rule does not prohibit, even if the activities fit the definition provided in Rule 7(b).197 These exemptions include allowing nonlawyer employees of financial institutions, landmen, title insurance companies, and CPAs to conduct work within their regular course of business without fear of violating the court rules or the statute which prohibits the unauthorized practice of law.198

Notably, there are fifteen exemptions that apply to occupations in varying industries.199 To circumvent the prospect of a coder practicing law by coding a smart contract, the committee charged with adopting new rules governing the unauthorized practice of law must recommend a new exemption to the Court to accommodate smart contract coders.200 This exemption would be advantageous, as it would serve as protection for smart contract coders who desire to perform their duties without concern of practicing law without a license.201 The addition to the rules should reflect existing exemption language by allowing licensed smart contract coders to code contracts, but requiring the coders to stay within the scope of coding and prohibiting them from giving legal advice regarding the legal effect of the smart contract.202

An exemption for smart contract coders is one solution to the uncertainty of unauthorized practice of law claims in Wyoming, though there is a sense of hesitation in considering whether other states would allow for such an exemption.203 If other states choose not to adopt this court rule exemption, the rules of professional responsibility permit attorneys to assist third-parties in the

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196 Wyo. R. BaR. Auth. PrAC. r. 7(b).
197 Id. r. 7(c).
198 Id. r. 7(c)(1), (2), (4), (13).
199 Id.
200 Telephone Interview with Mark Gifford, Bar Counsel, Wyoming State Bar (Oct. 4, 2018) (explaining how the governing committees propose rule changes to the Wyoming Supreme Court, which becomes effective if the Court issues an order accepting the rule change).
201 See supra notes 188–91 and accompanying text.
202 See supra notes 197–98 and accompanying text.
203 Id. (noting the governance of unauthorized practice of law varies state-by-state, and how it is unclear whether other states would adopt Wyoming’s approach).
practice of law, such as an attorney assisting a computer coder to draft a smart contract for a client.\textsuperscript{204} However, the rule requires a lawyer to “make reasonable efforts to ensure that the [nonlawyer’s] conduct is compatible with the professional obligations of the lawyer.”\textsuperscript{205} If parties strictly follow this rule, an attorney would have to work closely with the computer coder to ensure the coding does mirror the agreed-upon conditions.\textsuperscript{206} Therefore, if an attorney is not proficient in reading or drafting code, they would be required to hire a third-party to ensure the language reflects the agreement to avoid malpractice claims.\textsuperscript{207} While this scenario might create a need for attorneys who specialize in smart contracts, it also detracts from smart contracts’ appeal of shorter transactional time and lower cost.\textsuperscript{208}

C. Jurisdictional and Choice-of-Authority Challenges

Contract law varies by state and is a central focus of comparative study.\textsuperscript{209} To mitigate the dissimilar laws, courts have developed the choice of law doctrine over time.\textsuperscript{210} This doctrine allows courts to consider the application of another jurisdiction’s laws.\textsuperscript{211} The general rule provides that parties to a contract can choose the applicable law that governs the contract.\textsuperscript{212} Absent an explicit term from the contracting parties, the rule defers to local law of the state which has the most significant relationship to the transaction and the parties.\textsuperscript{213}

This choice of law provision also passes over to electronic contracts, though not without complication.\textsuperscript{214} While most states have adopted the choice of law doctrine as a general rule, parties can still encounter problems in an electronic contract that does not specify the jurisdiction.\textsuperscript{215} If, in litigation, the court applies the “most significant relationship” test which refers to the geographic locations of discussions, performance, construction, and place of the content, the smart

\begin{itemize}
\item \textsuperscript{204} See Model Rules of Prof’l Conduct r. 5.3 (Am. Bar Ass’n 2015).
\item \textsuperscript{205} Id.
\item \textsuperscript{206} O’Shields, supra note 70, at 193.
\item \textsuperscript{207} McKinney et al., supra note 68, at 334.
\item \textsuperscript{208} See McKinney et al., supra note 68, at 325 (explaining how human intervention removes “smart” from the smart contract).
\item \textsuperscript{211} Id. ¶ 106.
\item \textsuperscript{212} Restatement (Second) of Conflict of Laws § 187 (Am. Law Inst. 1971).
\item \textsuperscript{213} Id.
\item \textsuperscript{215} See id. at 273.
\end{itemize}
contract might execute under laws that neither party considered due to the extensive geographic nature of electronic transactions.\textsuperscript{216}

When dealing with traditional contracts, the best practice in choosing a governing authority is for parties to include a choice of law provision, but this practice does not necessarily apply to smart contracts.\textsuperscript{217} The nuances of jurisdictional authority in traditional contracts look vastly different than those in smart contracts.\textsuperscript{218} The parties of traditional internet transactions are usually identifiable, unlike parties using blockchain-based smart contracts that operate on a decentralized network.\textsuperscript{219} A location for the blockchain does not exist, making it impossible to apply traditional choice of law rules to a smart contract in which at least one transacting party remains anonymous.\textsuperscript{220}

Analysts have proposed alternatives to applying a traditional choice of law clause to a smart contract.\textsuperscript{221} Rather than parties identifying the jurisdictional authority, the smart contract itself can determine the most appropriate governing authority.\textsuperscript{222} If the smart contract transacts for a piece of property, then the jurisdiction would fall at the location of the property.\textsuperscript{223} Parties may also choose a governing jurisdiction in a particular area where the court will apply well-developed legal standards.\textsuperscript{224} Eventually, there will likely be a need for specialized courts to adjudicate smart contract disputes, similar to the specialized courts that review patent appeal litigation.\textsuperscript{225}

\textbf{D. Questions of Liability}

Ideally, coders write the smart contract so that it will perfectly execute the intentions of the parties.\textsuperscript{226} But users of smart contracts should not assume

\begin{itemize}
  \item \textsuperscript{216} Id.
  \item \textsuperscript{217} Kaal & Calcaterra, supra note 184, at 134.
  \item \textsuperscript{218} See id. at 133.
  \item \textsuperscript{219} Id.
  \item \textsuperscript{220} See id.
  \item \textsuperscript{222} See id. (explaining how a jurisdiction might depend on an object in the smart contract).
  \item \textsuperscript{223} Id.
  \item \textsuperscript{224} Larry D. Wall, “Smart Contracts” in a Complex World, FED. RES. BANK OF ATLANATA (July 2016), https://www.frbatlanta.org/cenfis/publications/notesfromthevault/1607 (explaining how some financial contracts often stipulate a legal code of the United Kingdom or New York since these jurisdictions have a reputation for predictable and fair decisions).
  \item \textsuperscript{225} Chin, supra note 110, at 113–14.
coders writing the contract are faultless.\textsuperscript{227} Generally, enough human intervention creates error, and humans will write the software code that informs the smart contract of the conditions that are required to self-execute.\textsuperscript{228} A software coder could make an error, or an operator could bug the code with a virus which misinforms the smart contract.\textsuperscript{229} Courts have not yet had the opportunity to resolve these liability questions, though it is likely the issues will eventually reach the courts.\textsuperscript{230} Alternatively, a hacker could identify a vulnerability in the smart contract and use the vulnerability for their own benefit.\textsuperscript{231} This situation already occurred once with the first decentralized autonomous organization, which lost over $50 million when hackers exploited a vulnerability in the code of an investment fund.\textsuperscript{232}

To avoid misallocation of liability of a smart contract, parties should allocate risk in a prior agreement or in the smart contract itself.\textsuperscript{233} The way the parties allocate risk will depend on whether the contracting parties or a third party attribute to the coding error.\textsuperscript{234} This prior agreement would allow the parties to introduce extrinsic evidence to determine the intent if there were a dispute over the intended function of the code without the mistake.\textsuperscript{235} In this circumstance, a court can restructure the writing to reflect the original intention of the parties.\textsuperscript{236} This proposition is analogous to traditional contract law, which supports the court’s consideration of evidence of surrounding circumstances to determine the parties’ intent.\textsuperscript{237} If the parties want to avoid a court allocating liability in the case

\begin{itemize}
\item \textsuperscript{227} See id.
\item \textsuperscript{228} See id. (“[T]here is an inherent contradiction between [the] assumption [that code will perfectly execute] and the reality that code is rarely perfect. Indeed, software engineers are not trained to write perfect code; it is expected that bugs will be identified and fixed.”).
\item \textsuperscript{229} See id.
\item \textsuperscript{230} See id.
\item \textsuperscript{231} Id.
\item \textsuperscript{232} Rodrigues, supra note 182; see also Richard J. Johnson et al., Blockchain Technology, Security, and Privacy, in BLOCKCHAIN FOR BUSINESS LAWYERS, supra note 6, at 120 (explaining how the first Decentralized Autonomous Organization, launched by the Ethereum founder to serve as an investment fund, raised $150 million before hackers exploited a vulnerability in the software, permitting them to take $55 million worth of cryptocurrency).
\item \textsuperscript{233} Eliza Mik, Smart Contracts: Terminology, Technical Limitations and Real World Complexity, 9 L., INNOVATION & TECH. 269, 279 (2017).
\item \textsuperscript{234} Id.
\item \textsuperscript{235} See Chin, supra note 110, at 109 (noting that parties might need to rely on outside evidence to determine intent if a dispute were to ever occur); Extrinsic evidence, BLACK’S LAW DICTIONARY, supra note 93 (defining extrinsic evidence as “[e]vidence relating to a contract but not appearing on the face of the contract because it comes from other sources, such as statements between the parties or the circumstances surrounding the agreement”).
\item \textsuperscript{236} Chin, supra note 110, at 109.
\item \textsuperscript{237} See, e.g., Ultra Res., Inc. v. Hartman, 2015 WY 40, ¶ 56, 346 P.3d 880, 889–900 (2015) (“As we have stated before, even when a contract is unambiguous, evidence of the circumstances surrounding its execution may be considered to determine the parties’ intent.”); Madison v. Marlatt,
of a coding mistake or breach, parties can choose to program dispute resolution into the code. 238 This would limit the need to resolve matters in court and could help facilitate innovative responses in light of the complexity of a new market. 239

V. WYOMING’S BLOCKCHAIN LEGISLATION
AND A RECOMMENDATION FOR FUTURE LEGISLATION

With blockchain technology emerging as a strong intermediary for trans- actional recordkeeping, the original idea behind smart contracts is modernizing and developing into an entirely new area of transactional regulation. 240 Wyoming was among the first states to pass blockchain legislation. 241 In the 2018 Budget Session, the Legislature passed sweeping legislation embracing blockchain as an engine of economic growth. 242 The members of the Blockchain Task Force (Task Force) proactively introduced legislation that impacts overall blockchain technology and blockchain companies. 243 The five new statutes

“(1) exempt utility blockchain tokens from state securities laws; (2) exempt virtual currency from the state’s money transmitter statute; (3) authorize corporate recordkeeping by distributed or electronic records; (4) exempt virtual currency from state property taxation; and (5) authorize ‘series’ LLC’s, a corporate form considered especially conducive to blockchain-related business.” 244

619 P.2d 708, 714 (Wyo. 1980) (“However, when the terms of the contract are unclear on their face and doubt arises from the contract itself as to what the parties mean, then extrinsic evidence becomes admissible in order to establish the parties’ original intent and thus aid the court in construing the contract accordingly.”).

238 Catchlove, supra note 166, at 15.

239 See Chin, supra note 110, 115 (explaining how smart contract dispute resolution could mirror strategies adopted by the derivatives industry, a sector with significant and complex disputes, similar to that expected in the blockchain industry).

240 See O’Shields, supra note 70, at 184–85.


242 Lyle et al., supra note 6, at 185.

243 UW, State Blockchain Efforts Boosted by Technology Pioneer, UNIV. WYO. (June 5, 2018), http://www.uwyo.edu/uw/news/2018/06/uw-state-blockchain-efforts-boosted-by-technology-pioneer.html (“The new legislation will allow Wyoming to be the first U.S. state and one of the only places in the world to create a legally distinct asset class for blockchain, and positions the state to be a leader in the blockchain sector.”) “Lawmakers have touted Wyoming as an ideal place for blockchain, given Wyoming’s need for economic diversification.” Id.

This legislation shows Wyoming’s willingness to fully embrace blockchain.\textsuperscript{245} Moving forward, the Legislature and the Task Force are discussing potential legislative proposals.\textsuperscript{246} One proposal defines smart contracts and addresses the legal recognition of smart contracts.\textsuperscript{247}

The Task Force was considering a new bill pertaining to smart contracts for the upcoming session.\textsuperscript{248} The draft of the bill defined smart contracts as automated transactions “comprised of code or programming language that executes the terms of the contract, which may include taking custody or transferring assets, or issuing legally executable instructions for these actions, based on the occurrence or non-occurrence of specified conditions” that are carried out on the blockchain.\textsuperscript{249}

Besides defining smart contracts, the proposed bill addressed how the Uniform Electronic Transactions Act would apply to blockchain technology.\textsuperscript{250} The proposed bill also uniquely proposed a resolution plan requirement for smart

\textsuperscript{245} See Lyle et al., supra note 6, at 185.


\textsuperscript{249} See Working Draft Version 5, 19LSO-0049, supra note 15, at § 40-28-101(a)(iv)(A)–(C). There was some commentary on the Bill about whether subparagraph (C) was limiting in that it “ties smart contracts to blockchain technology and may not account for future innovations.” \textit{Id.} The draft also mentioned subparagraph (B) was generally borrowed from Tennessee’s legislation. \textit{Id.}

\textsuperscript{250} See \textit{id.} sec. 1. “The legislature finds the following: . . . .”

(iv) The existing standards of the Uniform Electronic Transactions Act, W.S. 40-21-101 through 40-21-119, are wide-ranging and likely already govern blockchain-based transactions, including smart contracts;

(v) The provisions of this act provide legal certainty for parties who transact business through smart contracts, underscoring the enforceability of smart contracts and ensuring that smart contracts above a certain monetary threshold contain a resolution plan memorializing the intent of the parties in the event of specified contingencies or emergencies . . . .

\textit{Id.}
contracts with values exceeding a certain threshold amount.\textsuperscript{251} The legislative staff comment about the required resolution plan provides a substantive summary of the proposed sections:

Subsections (b) and (c) of this section state that a smart contract which exceeds a specified value threshold must have some kind of resolution plan which addresses one or more of the factors above. The Task Force requested that it not be prescriptive, but that it ensure that the parties to a smart contract have thought somewhat about how they want the contract resolved in an emergency, without having to obtain judicial relief to terminate the smart contract. Smart contracts can perform contractual duties without human direction, and as a result, lengthy judicial resolution can be inefficient, complicated and costly because of the need to unwind the smart contract. This section is meant as a “living will” to avoid the need for judicial resolution or to simplify a judge’s task dramatically by memorializing the intent of the parties regarding emergency situations, i.e., facilitating a quick temporary restraining order or preliminary injunction.\textsuperscript{252}

During discussion between members of the Task Force and the public, the complexities of smart contracts’ regulation remained apparent.\textsuperscript{253} Some commentators questioned the need to regulate smart contracts at all, while others begged for clearer and more comprehensive language.\textsuperscript{254} The discussion about smart contracts, combined with the public commentary, revealed many unanswered questions and the need for more work before moving forward with the proposed legislation.\textsuperscript{255}

Different states’ laws and regulations are creating a patchwork in the blockchain landscape.\textsuperscript{256} For some commentators, current smart contract legislation

\textsuperscript{251} See id. § 40-28-102 (“Required Resolution Plan for Specified Smart Contracts; Characteristics”).


\textsuperscript{254} See id. at 2:27:52, 2:39:37.

\textsuperscript{255} See id.

\textsuperscript{256} See Lyle et al., supra note 6, at 187–202; Carla Reyes, Moving Beyond Bitcoin to an Endogenous Theory of Decentralized Ledger Technology Regulation: An Initial Proposal, 61 VILL. L. REV. 191, 211 (2016) (explaining how regulatory bodies like courts and legislators “have acted independently resulting in a regulatory mishmash of guidance, clarification, extension and ongoing discussion”).
falls short for its failure to adequately define important terms like “contract” and “executed.” Wyoming should learn from this failure, and carefully define and draft legislation to reduce ambiguity. At the same time, the Legislature should resist comprehensively regulating smart contracts until the industry standards are clear and courts have addressed the many uncertainties.

Commentators agree that nothing in Wyoming’s current legislation would prohibit the use of smart contracts. For this reason, the Legislature should declare a legislative finding that the Uniform Electronic Transactions Act already permits the use of legally enforceable smart contracts. This finding will demonstrate Wyoming’s hospitality to the use of smart contracts and avert the Legislature from enacting specific regulations that inadvertently use limiting language. This finding will also provide the judiciary with enough guidance to enforce the use of smart contracts that adhere to traditional contractual principles and decline to enforce those that do not adhere to such principles until further regulation allows for them.

After the Legislature passes a legislative finding, it should work closely with the Blockchain Coalition and the Task Force to observe standards in the smart contracts industry to help craft future legislation. These groups should monitor existing smart contracts legislation to see how courts adjudicate smart contracts in other states. These observations will certify that the Legislature

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257 Mike Orcutt, States That Are Passing Laws to Govern “Smart Contracts” Have No Idea What They’re Doing, MIT TECH. REV. (Mar. 29, 2018), https://www.technologyreview.com/s/610718/states-that-are-passing-laws-to-govern-smart-contracts-have-no-idea-what-theyre-doing/ (commenting on how the Tennessee definition of smart contracts was limiting because it only provided for smart contracts using blockchain technology); see also September 24 AM Audio 2: Blockchain Task Force Meeting, supra note 253, at 2:55:30 (commenting on how smart contracts should be defined in a statute to avoid the danger of being classified as clickbait contracts, where users agree to terms that often include questionable enforceability).

258 See supra notes 36, 101, 151, 230 and accompanying text.


260 This legislative finding would benefit from similar language as used in Working Draft Version 5, 19LSO-0049, sec. 1, supra note 15. See supra note 250 and accompanying text.

261 See supra note 257 and accompanying text (illustrating how easily it is for the Legislature to enact limiting language when they draft bills to conform with a specific technology).

262 See generally DIGITAL ASSET TRADE ASSOC., https://digitalasset.org (last visited Nov. 18, 2018) (showing how The Digital Asset Trade Association is the leading advocacy group that sets policy considerations for the industry, including smart contracts and digital currency); Shlomit Azgad-Tromer, Crypto Securities: On the Risks of Investments in Blockchain-Based Assets and the Dilemmas of Securities Regulation, 68 Am. U.L. REV. 69, 133–34 (2018) (“The facts provided to the court in any single particular case would rarely suffice to resolve a blockchain litigated case. Norms and industry standards require broader understanding of the unique and almost peculiar dynamics of the crypto markets.”); see also supra note 258 and accompanying text.

263 See supra note 247.
only passes regulations that adhere to such standards and serve to bring capital to Wyoming.265 This prudent monitoring of standards will also preclude the Legislature from passing hasty legislation solely in response to the actions of other states.266

Though the resolution requirement plan proposed in the working draft is distinctive, the Legislature should pause on enacting such legislation until the industry decides further standards.267 The reality is, “[i]t is too early to say how smart contracts should be understood by the law and how, if at all, they should be regulated.”268 Legislative provisions so exclusive to Wyoming, like the resolution requirement plan, may bear unintended hindrances in the use and execution of smart contracts, which would arguably deter blockchain companies.269

In some instances, existing rules can apply to the use of smart contracts, but in other instances, policymakers will need to adapt the rules to the new context of smart contract transactions.270 Smart contracts that operate in the traditional contractual framework, which necessitates offer, acceptance, and consideration, are likely not worth regulating.271 But more broadly, smart contracts will pilot legal issues that courts and legislatures must address to provide a framework for parties interested in using them.272 Legislators and Task Force members should consider new regulatory techniques, like using code as the legal regulatory scheme of smart contracts, asking the judiciary to recognize a new exception for smart contract coders to prevent the unauthorized practice of law, and considering decisions that

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265 See supra note 50.

266 See, e.g., Adrianne Jeffries, Blockchain Laws Tend to be Hasty, Unnecessary, and Extremely Thirsty, VERGE (Mar. 29, 2018), https://www.theverge.com/2018/3/29/17176596/blockchain-bitcoin-cryptocurrency-state-law-legislation (“Most laws have definitions for terms like ‘blockchain’ and ‘smart contract,’ and those definitions could end up causing problems in the future . . . , if some future iteration of a blockchain or a smart contract doesn’t strictly meet the definition set out in the law.”); see also supra notes 247, 256 and accompanying text.

267 See Kolber, supra note 42, at 226–30.

268 Id. at 226; Azgad-Tromer, supra note 263, at 137 (explaining how certain groups of regulators, scholars, judges, and industry players have not fully grasped blockchain technology or the best way to regulate it; rather, there is an absence of structural analysis at this time, a necessity for establishing laws to govern blockchain and its emerging markets).

269 Lyle et al., supra note 6, at 187 (explaining how uniformity brings higher cost of compliance for blockchain companies doing business in more than one state).

270 See Maya Chilaeva & Pia Dutton, Smart Contracts: Can They be Aligned with Traditional Principles or are Bespoke Norms Necessary?, 8 J. INT’L BANKING & FIN. L. 479 (2018).

271 See supra notes 150–87 and accompanying text.

272 See supra notes 150–239 and accompanying text.
specialized courts make when adjudicating smart contract disputes. Because smart contracts are such an innovative mechanism, blockchain companies planning to utilize smart contract technology would better receive regulation that echoes advancement in modernization. Policymakers should encourage regulations designed to mitigate risk, but should exercise thoughtfulness and accuracy in creating the scope of regulation. This thoughtfulness in enacting smart contracts legislation should motivate smart contract developers to work with the legal landscape instead of against it.

VI. CONCLUSION

Blockchain and smart contracts are distinctive, multifaceted technologies that generate much-needed innovation in states such as Wyoming. Because Wyoming has such an inherent capability to attract blockchain companies, it should recognize the importance of creating an amicable environment for them. Smart contracts have evolved remarkably over time, beginning as simple computer verification processes and progressing into sophisticated, self-executing programs with potential to transform industries as a result of blockchain technology. Smart contracts possess several advantages, providing for more efficient business operations, aiding transactional transparency, and yielding less risk of breach. Alongside their advantages, smart contracts pose various limitations, including uncontrollability, inflexibility, and overall uncertainty. Aside from general concerns, smart contracts have raised a myriad of legal issues that courts and legislatures must eventually address. Courts and legislatures have hesitated to determine the legal enforceability of smart contracts under traditional contract law principles. Smart contract coders could

273 See supra notes 180, 203, 225 and accompanying text. Though it is unlikely Wyoming will be home to such specialized courts due to an overall absence of specialized courts within the state, Wyoming can still look to other states’ specialized courts when considering how to adjudicate such claims.


275 Kiviat, supra note 150, at 607.

276 See Jaccard, supra note 221, at 25.

277 See supra notes 38–56 and accompanying text.

278 See supra notes 6–9, 38–47 and accompanying text.

279 See supra notes 57–89 and accompanying text.

280 See supra notes 90–95 and accompanying text.

281 See supra notes 96–125 and accompanying text.

282 See supra notes 150–239 and accompanying text.

283 See supra notes 150–87 and accompanying text.
potentially practice law without a license simply by way of writing smart contract code.\textsuperscript{284} Users feel uncertain about which law governs the smart contract due to the ambiguous choice of law provisions as they apply to electronic agreements.\textsuperscript{285} Authorities have yet to clarify the liability of parties when a coder mis-codes a smart contract or when a smart contract executes according to mistaken terms.\textsuperscript{286}

Wyoming is embarking on a sophisticated regulatory path that requires thoughtful consideration and innovation.\textsuperscript{287} Due to blockchain's highly complex nature, Wyoming should avoid hurriedly passing smart contract legislation until it realizes the bulk effects of other states’ smart contracts legislation.\textsuperscript{288} Rather, the Legislature should pass a legislative finding, confirming that the state’s existing laws are conducive to the use of smart contract technology.\textsuperscript{289} Wyoming should enact further legislation that follows the trajectory of the industry standards as they become clearer.\textsuperscript{290} Innovative regulations will demonstrate Wyoming’s eagerness to appeal to smart contract users, which will in turn stimulate the economy, revolutionize current industries, and expand new industries within the state.\textsuperscript{291} As noted by one blockchain-sector advisor, state-by-state regulation of blockchain technology is “a relay race, not a sprint,” and more achievable innovation occurs as one state takes the baton from another.\textsuperscript{292}

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\item See supra notes 188–208 and accompanying text.\textsuperscript{284}
\item See supra notes 209–25 and accompanying text.\textsuperscript{285}
\item See supra notes 226–39 and accompanying text.\textsuperscript{286}
\item See supra notes 256–58, 274–76 and accompanying text.\textsuperscript{287}
\item See supra notes 262, 264–66 and accompanying text.\textsuperscript{288}
\item See supra notes 260–62 and accompanying text.\textsuperscript{289}
\item See supra notes 258–69 and accompanying text.\textsuperscript{290}
\item See supra notes 274–76 and accompanying text.\textsuperscript{291}
\item Gary Miller, Blockchain Valley: Wyoming is Poised to Become the Cryptocurrency Capital of America, Newsweek (Mar. 2, 2018), https://www.newsweek.com/wyoming-cowboy-state-poised-today-become-blockchain-valley-828124 (quoting former director of the Delaware blockchain initiative, Andrea Tinianow).\textsuperscript{292}
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