

State Digital Currency Principles and Framework

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Abstract

States have begun to look at how digital currencies, such as Bitcoin, and the businesses that utilize them to provide consumer products, interact with money transmission and consumer protection policy. This report offers model language for a *sui generis* statute or implementing regulation. It is not a draft or model bill in full. Instead, language is offered for the essential components of any digital currency law: *who must be licensed, how are start-ups encouraged, how is solvency guaranteed, etc.* This report can also be used as an aid in the process of amending existing money transmission statutes, particularly where simple amendments to definitions could prove vague and under- or over-inclusive.

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About Coin Center

Coin Center is a non-profit research and advocacy center focused on the public policy issues facing cryptocurrency technologies such as Bitcoin. Our mission is to build a better understanding of these technologies and to promote a regulatory climate that preserves the freedom to innovate using blockchain technologies. We do this by producing and publishing policy research from respected academics and experts, educating policymakers and the media about blockchain technology, and by engaging in advocacy for sound public policy.

Introduction

States have begun to look at how digital currencies, such as Bitcoin, and the businesses that utilize them to provide consumer products and services, interact with money transmission and consumer protection policy. Texas¹ and Kansas,² for example, have published guidance explaining that third-party bitcoin exchanges *do* engage in money transmission and therefore must be licensed as money transmitters with state authorities. New York, by contrast, has decided to place digital currency businesses under a separate regulatory regime from traditional money transfer and has proposed a so-called, “BitLicense.”³

Developing *sui generis* digital currency statutes or regulation is difficult, however. Without carefully chosen language and an understanding of the underlying technology, the regulatory regime could fail to provide much needed certainty to innovative companies, fail to protect consumers, and instead stifle the economic growth, new jobs, financial inclusion, and business transparency that these technologies promise.

This report offers model language for a *sui generis* statute or implementing regulation. It is not a draft or model bill in full. Instead, language is offered for the essential components of any digital currency law: *who must be licensed, how are start-ups encouraged, how is solvency guaranteed, etc.*

This report can also be used as an aid in the process of amending existing money transmission statutes, particularly where simple amendments to definitions could prove vague and under- or over-inclusive. To illustrate, formally re-defining “money” within a statute to include digital or virtual currencies would not be sufficient to guarantee efficient regulation of these new technologies. One must also define what it means to “transmit” a digital currency or be a “digital currency transmitter.” Traditional money transmission occurs when an intermediary reassigns credits or debits among its customers or partner institutions. These institutions have free reign to assign and reassign credit to different accounts, subject to applicable legal restrictions, as long as they remain solvent at the end of the day. By contrast, bitcoins, for example, can *only* be transmitted by the holders of unique cryptographic keys. Therefore, only a business that holds these keys could ever have the ability to transmit a bitcoin. A transmittal instrument for a digital currency is not, then, a

¹ Texas Department of Banking, SUPERVISORY MEMORANDUM - 1037 REGULATORY TREATMENT OF VIRTUAL CURRENCIES UNDER THE TEXAS MONEY SERVICES ACT (Apr. 2014) *available at* <http://www.dob.texas.gov/public/uploads/files/consumer-information/sm1037.pdf>.

² Kansas Office of the State Bank Commissioner, REGULATORY TREATMENT OF VIRTUAL CURRENCIES UNDER THE KANSAS MONEY TRANSMITTER ACT (June 2014) *available at* http://www.osbckansas.org/mt/guidance/mt2014_01_virtual_currency.pdf.

³ See New York Department of State Department of Financial Services, PROPOSED NEW YORK CODES, RULES AND REGULATIONS TITLE 23. DEPARTMENT OF FINANCIAL SERVICES CHAPTER 1. REGULATIONS OF THE SUPERINTENDENT OF FINANCIAL SERVICES PART 200. VIRTUAL CURRENCIES (Jan. 2015) *available at* http://www.dfs.ny.gov/legal/regulations/revised_vc_regulation.pdf.

promise to pay; it is the *ability to pay*—*i.e.* cash on hand—as measured by possession or knowledge of cryptographic keys sufficient to execute or prevent a transaction.

For example, a bill has been introduced in Pennsylvania to amend its money transmission licensing statute in an attempt to cover digital currency transmission. In this draft, “virtual currency” is added to the definition of “money.” [cite] The definition of “transmittal instrument” is amended to include “electronic transfer . . . for the payment of money.” “Electronic transfer,” however, is not defined. Were this draft bill to pass in its current form, we might reasonably expect a dispute to arise and a judge to interpret the definition in a reasonable manner; however, it seems inefficient to leave such an important distinction to an *ex post*, judicial or administrative process. Instead, Pennsylvania should be clear when certain business activities *are* digital currency transmissions and when they are not. Pennsylvania should adopt the definition of “digital currency transmission” found in Part 1, below, and revise their definition of “transmittal instrument” to include “digital currency transmission” rather than—or in addition to—“electronic transfer.”

For use in either *sui generis* or amending legislation, these model excerpts are explained piece by piece in the following sections.

1. Defining Digital Currency Transmission

In its policy statement on state virtual currency regulation, the Conference of State Bank Supervisors has clearly set out the normative case for consumer protection regulation of digital currencies:

[T]ransmitting, exchanging, and/or holding of value on behalf of another . . . place the activity provider in a position of trust. This position of trust is the basis for most financial services laws and regulations, and should be applied regardless of the medium of value.⁴

Digital currency presents a challenge to regulators because digital currency can be the medium for the transmission, exchange, and holding of consumer value, and yet, unlike traditional electronic financial tools, digital currency can also be used for other unrelated purposes. It can be used by intermediaries to offer a financial service without requiring the trust of customers; it can be used by intermediaries to offer a non-financial service (such as a notary service), and it can be used entirely without intermediaries.

Undoubtedly, some consumers will ask an intermediary to store, exchange, and transmit their digital currency, and these intermediaries thereby assume a position of trust, which generates the basis for licensing and regulation. The key to developing such licensing and

⁴ Conference of State Bank Supervisors, *CSBS Policy on State Virtual Currency Regulation 2* (Dec. 2014) available at <http://www.csbs.org/regulatory/ep/Documents/CSBS%20Policy%20on%20State%20Virtual%20Currency%20Regulation%20--%20Dec.%2016%202014.pdf>

regulation, however, is to include those trusted intermediaries within a regulatory scheme while excluding others who do not assume that trust or do not offer financial services.

Intermediaries who do not assume a position of trust, non-financial uses, and individual access are digital currency innovations that should be encouraged. These intermediaries can benefit both consumers and businesses through improved financial privacy, financial inclusion, and vibrant technology-based economies. These uses should not be burdened by compliance costs that lack concomitant consumer protection benefits.

Trusted intermediaries, on the other hand, so long as they walk and quack like a money transmitting duck, offer the same case for regulation as traditional financial services. The key is narrowly defining that duck. Statutes should limit licensure to those businesses or persons engaging in “Digital Currency Transmission.” Digital Currency Transmission should then be defined as follows:

Digital Currency Transmission

- A. *Qualifying activities.* A business shall be found to be engaged in Digital Currency Transmission if and only if the business regularly and in the course of business has the ability to [unilaterally execute](#)⁵ or [prevent](#)⁶ a Digital Currency transaction [on behalf of others](#).⁷
- B. *Non-qualifying activities.*⁸ In no event shall any of the following activities, in and of themselves, be interpreted as Digital Currency Transmission:⁹
1. [developing, distributing, or servicing software](#);⁹
 2. [contributing software, connectivity, or computing power](#) to a [Decentralized Digital Currency](#);¹⁰
 3. [providing data storage or security services](#) for a Digital Currency Business;¹¹ or
 4. engaging in otherwise qualifying activities undertaken for [non-financial purposes](#),¹² or that do not involve more than a [nominal amount](#)¹³ of Digital Currency.

The sections that follow explain in detail each component of the above model language.

A. “Digital Currency Transmission” vs. “Virtual Currency Business Activity”

The New York Department of Financial Services, in its proposed BitLicense, chose to specify which entities require licensure and which do not by defining the novel phrase “Virtual currency business activity”¹⁴ as the set of regulated institutions. Tabula rasa, better terminology would be “Digital Currency Transmission.” “Virtual currency” could refer to any sort of non-tangible currency, e.g., dollars sent through Paypal or airline miles. “Digital,” by contrast, makes clear that newer electronically tokenized money is what is at issue. Additionally, the broad phrase “business activity” suggests any and all activities relating to these new technologies. Money transmission, on the other hand, is a term that signifies a

⁵ See *infra* Part 1.C “unilaterally execute” at p. 4.

⁶ See *infra* Part 1.D “unilaterally prevent” at p. 6.

⁷ See *infra* Part 1.E “on behalf of others” at p. 6.

⁸ See *infra* Part 1.G “Non-qualifying activities” at p. 8.

⁹ See *infra* Part 1.H “developing, distributing, or servicing software” at p. 8.

¹⁰ See *infra* Part 1.I “contributing software, connectivity, or computing power” and “Decentralized Digital Currency” at p. 9.

¹¹ See *infra* Part 1.J “providing data storage or security services” at p. 10.

¹² See *infra* Part 1.K “non-financial purposes” and “nominal amount” at p. 11.

¹³ See *Id.*

¹⁴ BitLicense, *supra* note 3, at § 200.2(q)(2).

limited range of businesses that help consumers move money, not all money-related business. As similar regulations are tailored to new technologies for moving money, the terminology should remain appropriately circumscribed: “digital currency transmission” not “digital currency business” or “business activity.”

B. Differentiating by Capability and Risk Rather Than Technology or Method

The determination of which businesses warrant regulation and which do not should be made by reference to what harm the business is capable and incapable of doing, rather than whether they—vaguely and metaphysically—“hold” or “store”¹⁵ units of digital currency.

The only businesses who are truly capable of harming their digital currency consumers are those who can lose (e.g., hacking), mispend, immobilize, or fail to protect a customer’s funds entrusted to them. Therefore, the businesses that should be clearly covered within a definition of Digital Currency Transmitter are those that have the ability, ***on their own and without seeking additional information (a secret key) from the consumer***, to execute or prevent a digital currency transaction. That ability raises the potential for digital currency mismanagement and is what gives rise to a position of trust.

C. “unilaterally execute”

Digital currency allows for programmatic money. Software can manipulate the digital currency so that it exists in a state of divided control. In Bitcoin technologies, for example, this divided control is made possible with so-called multi-signature wallets. Multi-signature wallet software can assign bitcoins to public addresses that are linked to multiple private keys, each separately stored, some majority of which are needed to effectuate any transfer out of the wallet addresses. Think of it like the keys to a hypothetical safe deposit box at a bank: You have one key, your banker has the other, and both are required to open the box. Bitcoin addresses can be mathematically linked so that some number (M) of the total linked keys (N) are required to move funds. This is referred to as *M-of-N* transactions¹⁶ or, more simply, “multi-sig.”

Given multi-sig, some parties may have only one of several keys necessary to execute a digital currency transaction. For example, if three key signatures are required to transact, and a service provider only ever holds one key, that service provider should not be understood,

¹⁵ Digital or “virtual” currency is not, by definition, something that is capable of being held in the literal sense. Moreover, while we talk of “storing” digital files, perhaps in a cloud service like Dropbox, we cannot talk of storing Bitcoins. Bitcoins are not files; they are assignments of value made to pseudonymous addresses and listed on a public ledger called the blockchain. ***No one holds or stores bitcoins; one holds or stores the cryptographic keys that grants one permission on the network to sign for transactions involving particular addresses.*** To the extent anyone ever *holds* or *stores*, or simply *has* bitcoins, it will be because they have control over these cryptographic keys.

¹⁶ See Gavin Andresen, *BIP 0011*, (Oct. 2011) <https://github.com/bitcoin/bips/blob/master/bip-0011.mediawiki>. See also Ben Davenport, *What is Multi-Sig, and What Can It Do? A Backgrounder for Policymakers*, COIN CENTER (Jan. 2015) available at <http://coincenter.org/2015/01/payment-security/>

for the purposes of consumer protection, as being a Transmitter of Digital Currency. Minority key-holders cannot, solely by their own negligence or malevolence, lose consumer value. This is why our proposed definition includes the word **unilaterally**. That caveat is important. These parties can play highly valuable consumer-protective roles in the digital currency ecosystem. They should be supported in their development. Moreover, if they cannot abscond with or otherwise lose a customer's funds they should not be subject to the costly burden of licensure.

A company could, for example, help store only the disaster relief key of a customer who is afraid of losing her password or is afraid of her digital currency exchange being compromised. Another company could, for example, hold a single key to sign off on transactions initiated using the consumer's key after, and only after, the company verifies that the consumer's phone has not been hacked or her key otherwise compromised.

Both of these hypothetical companies would provide an essential service in securing and safeguarding customer funds. Both hypothetical services are novel and unavailable to the customers of traditional banks and money transmitters because they rely on the use of new cryptographic tools and the blockchain to divide control among multiple businesses without using laws to enforce that division. Neither of these companies, however, should need to be licensed as Digital Currency Transmitters. Without possession of *sufficient* keys to move or immobilize a customer's funds on its own, the company does not pose a consumer protection risk; quite the opposite, they mitigate that risk.

Such companies will be highly valuable innovators in the field of digital currency. The technology that enables divided key control, *i.e.*, multi-sig, is widely understood within the industry as the single best tool for preventing a Mt. Gox-style heist before it even happens.¹⁷ By defining custody and control to only those who can **unilaterally execute a transaction**, regulation would send a credible and welcome signal to innovators in the digital currency space: *we value your effort to build technology that will complement our consumer protection efforts and do not want to impede your progress unnecessarily.*

D. “unilaterally prevent”

In rare situations, a business could have sufficient keys to block a consumer from transacting with her digital currency, but insufficient keys to transact without consumer agreement. Sometimes this power is referred to as “negative control” over consumer funds. For example, if funds are moved into an address that requires 3 of 4 keys to sign for outgoing transactions, but a service provider retains two keys and its customer retains the other two, then the service provider can unilaterally prevent a transaction (the customer can only sign one or two keys at most, fewer than are required to transact) even though it cannot unilaterally execute a transaction (the service provider can only sign with two keys, not the required three).

¹⁷ See Ben Davenport, *No Sleep Till Multi-Sig* (Jan. 12, 2015) <https://medium.com/@bendavenport/no-sleep-till-multi-sig-7db367998bc7>.

It is unclear why a business would ever set up such an arrangement; however, if it does so should be regulated as a Digital Currency Transmitter. Should the business ever be hacked, for example, the hackers could take the two keys and blackmail the consumer into signing for a transaction that would send some funds to the thieves address and some to another address held by the customer. The blackmailers will probably succeed in this scam, given that refusal to comply will irrevocably lock all of the funds out of anyone's reach. Given this vulnerability, businesses unable to execute but able to prevent transactions pose similar risks to consumers, and assume a similar level of trust, as traditional money transmitters. They should be regulated accordingly.

E. “on behalf of others”

Individuals should not be regulated as money transmitters when they deal only in their own funds,; therefore, licensing regulations should clearly indicate that only transmission “on behalf of others” rises to the level of “Digital Currency Transmission.” Bitcoin and other cryptocurrencies enable users to manage their own deposits and transmissions without relying on a trusted intermediary. Such a user would install a *software wallet* on her computer or mobile device. The user would be able to receive and send bitcoins by storing keys to Bitcoin addresses on the device and writing transactions using the software and their keys. The software broadcasts those transactions to the peer-to-peer network, which then adjusts balances in the public ledger—the blockchain— accordingly.

F. “Non-qualifying activities”

The diversity of business models and activities enabled by digital currency technology underscores the importance of not only clearly defining who is, but also who is not, required to be licensed. Four particular activities should not, in and of themselves, qualify as Digital Currency Transmission.

G. “developing, distributing, or servicing software”

Regulation should not unnecessarily foreclose an individual's ability to access financial services that do not employ a trusted intermediary. Bitcoin and other cryptocurrencies, because they can be accessed with software and an Internet connection alone, enable this access. Accordingly, the mere development, distribution, or servicing of software that enables individuals to manage and transmit their own digital currency should not be regulated at the level of Digital Currency Transmission. At no point does the software provider hold keys to the user's funds. Instead, the software provider provides the user with tools to generate, store, manage, and use, locally, her own keys. Without the element of trust engendered by safekeeping a user's keys on her behalf, these service providers should not require licensure. Additionally, the mere production and distribution of software is protected

speech under the First Amendment.¹⁸ Any attempt to regulate entities acting solely in this capacity would likely be found unconstitutional.

H. “contributing software, connectivity, or computing power” and “Decentralized Digital Currency”

Digital currencies can be divided into two broad categories: centralized and decentralized.

Centralized digital currencies are created and controlled by a singular authority, usually a business. For example, Amazon.com has created Amazon Coin to allow its users to buy digital content on its sites.¹⁹ Such a business can create digital tokens and distribute or sell them to customers. That business can peg the value of the currency by promising to redeem those tokens for a fixed amount of fiat currency or some item of value, or they can allow the value to float according to market supply and demand. As the Financial Action Task Force has explained, “the vast majority of virtual currency payments transactions involve centralised virtual currencies. Examples [include] E-gold (defunct); Liberty Reserve dollars/euros (defunct); Second Life “Linden dollars”; PerfectMoney; WebMoney ‘WM units’; and World of Warcraft gold.”²⁰ Centralized Digital Currencies should be defined as follows:

Decentralized digital currencies, by contrast, are created and maintained by an open community of interested participants using open source software. These participants run the software, or a compatible modification of the software, on Internet-connected computers that, together, form an open peer-to-peer network. Decentralized digital currencies are also known as cryptocurrencies because all decentralized currencies, to date, have utilized theories and functions from the science of cryptography in order to guarantee both (A) that network participants cannot spend money they don’t own, and (B) that the money supply grows at a predictable rate. Bitcoin, launched in 2009,²¹ was the first cryptocurrency, and as of 2015, it remains the largest by market capitalization.²²

¹⁸ See *Bernstein v. United States Dept. of Justice*, 192 F.3d 1308 (9th Cir. 1999) [add in quoted language to support]. See also Robert X. Cringely, *Accidental Empires: How the Boys of Silicon Valley Make Their Millions, Battle Foreign Competition, and Still Can’t Get a Date* 28 (1992) (“Programs are written in a code that’s referred to as a computer language, and that’s just what it is—a language, complete with subjects and verbs and all the other parts of speech we used to be able to name back in junior high school. Programmers learn to speak the language, and good programmers learn to speak it fluently. The very best programmers go beyond fluency to the level of art, where, like Shakespeare, they create works that have value beyond that even recognized or intended by the writer.”).

¹⁹ See Amazon Inc., *Amazon Coins*, <http://www.amazon.com/gp/feature.html?docId=1001166401>; see also Wikipedia, *Amazon Coin*, http://en.wikipedia.org/wiki/Amazon_Coin.

²⁰ Financial Action Task Force, *Virtual Currencies: Key Definitions and Potential AML/CFT Risks*, (June 2014) available at <http://www.fatf-gafi.org/media/fatf/documents/reports/virtual-currency-key-definitions-and-potential-aml-cft-risks.pdf>.

²¹ See Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, (May 2009) available at <https://bitcoin.org/bitcoin.pdf>.

²² See Market capitalization of top cryptocurrencies available at <http://coinmarketcap.com/>.

Decentralized Digital Currencies should be defined as follows:

Decentralized Digital Currency. Decentralized Digital Currencies are digital currencies that (1) do not have a single administrative authority, and (2) are issued and transferred using an open network running transparent and non-proprietary software.

The consumer protection implications of this distinction are not trivial and warrant heightened licensing requirements for centralized currencies over their decentralized counterparts. A business utilizing a centralized digital currency can unilaterally decide to devalue consumer balances by issuing more currency, similar to how a normal financial servicer could choose to take on more debt. A cryptocurrency business is not at such liberty; it cannot unilaterally create more tokens because monetary supply is governed by an open, collaborative protocol of which the business is only a small part.

A centralized digital currency business can rearrange consumer balances, or refuse to honor a consumer credit; and it, ultimately, is the sole fiduciary of the currency's accounting records. A cryptocurrency business, even if it rearranges consumer balances once deposited, can only receive and dispense funds to a consumer by writing to an indelible and public accounting record, the public ledger or blockchain of the cryptocurrency. This ledger, unlike the closed, internal ledger of a centralized digital currency business (or, for that matter, a traditional financial services business) can be publicly audited in real time to guarantee the solvency of the firm.

A centralized digital currency business can operate using closed source software, meaning the underlying scarcity or safety of the currency cannot be easily audited by outside technologists. A cryptocurrency is open-source by default and the underlying fundamentals of that technology are scrutinized by a bevy of third-party validators.

Even though software that is fundamental to decentralized digital currencies may be released and updated primarily by an individual or group of individuals, e.g., Bitcoin's "Core Devs,"²³ these individuals cannot unilaterally change how the currency functions. To make any change to the currency, the updated software must be adopted by a majority of the peer-to-peer network. This network, composed as it will be of independent, technologically-sophisticated users, will audit the new code and likely reject any code that attempts to inject risk or fraud into the system.

Transaction validation on decentralized digital currency networks is performed by independent participants, often called "miners." These participants will, for brief (~10 minute) and sporadic intervals, have the sole power to validate all network transactions. However, that power is limited by fellow participants on the network. If a miner attempts to mark as valid a fraudulent transaction, the miner's work would be rejected by other network participants.

²³ See List of Bitcoin Core Developers available at <https://bitcoin.org/en/development>.

Therefore, individuals and businesses contributing to a decentralized digital currency are not trusted intermediaries. They can only take actions over which the network as a whole reaches consensus. As such, the user is not trusting a miner, she is trusting the majority of the Bitcoin network. Individual contributors to that network, whether they contribute computing power, software, or network access, should not be regulated or licensed as money transmitters, except in situations where they are able to unilaterally execute or prevent transactions.

New York’s money transmission regulator, Superintendent Benjamin Lawsky, has repeatedly insisted that he does not intend for the state’s BitLicense to require licenses of individuals or companies that only mine a decentralized digital currency, such as Bitcoin, or develop the software that underlies those currencies. As he recently stated:

We are regulating financial intermediaries. We are not regulating software development. To clarify, we do not intend to regulate software or software development. . . . Mining per se will not be regulated. To the extent the miner engages in other virtual currency activities, however—for example, hosting wallets or exchanging virtual currency—a license may be required for those activities. For mining itself, there will be no license requirement.²⁴

This approach is well-advised, allowing regulators to focus on trusted intermediaries who control consumer funds—and could lose them—rather than individuals who merely build the underlying infrastructure of the currency. To ensure that these individuals and business are unintentionally swept into a licensing regime, they should be clearly exempted by including the following language within a passage on non-qualifying activities: “contributing software, connectivity, or computing power to a Decentralized Digital Currency.”

I. “providing data storage or security services”

As the Bitcoin ecosystem has matured, a new class of infrastructure service providers has emerged. Interacting with the Bitcoin protocol can be technically complex, particularly when using advanced transactions such as the multi-sig or divided key transactions described in a previous section.²⁵ Early bitcoin hosted wallet providers and exchanges generally coded these transactions in-house. However, this activity may not be the organization’s expertise or comparative advantage. A consumer-facing business may find it more advantageous to focus on marketing, user experience, and regulatory compliance. It may, therefore, choose to contract-out the safekeeping of customer bitcoin keys to business-to-business firms that

²⁴ Benjamin M. Lawsky, *Excerpts From Superintendent Lawsky’s Remarks on Virtual Currency and Bitcoin Regulation in New York City* (Oct 14, 2014) available at http://www.dfs.ny.gov/about/speeches_testimony/sp141014.htm.

²⁵ See *infra*.

have developed expertise at utilizing multi-signature transactions and cold storage in order to best secure sensitive data.²⁶

This is not novel in the world of Internet technologies. The video-on-demand service Netflix, for example, does not actually build or maintain the technology necessary to store video data. Instead, it relies on Amazon's cloud storage solution, Amazon Web Services.²⁷ If a Bitcoin bank or exchange decided to contract-out the safekeeping of customer keys, it would raise a novel regulatory question. Do both the consumer-facing bitcoin business, as well as the service provider it uses to secure its data, need to be licensed? Double-licensing would substantially erode any cost-savings thanks to firm specialization, and would likely discourage a competitive market for business-to-business digital currency security. The result would be higher fees for consumers as well as less security.

As a result, only one party should be licensed in such a situation: the consumer-facing business. The consumer-facing business holds itself out as a trusted intermediary to its customers who may not have the time, expertise, or caution necessary to effectively comparison shop or hedge against risks. A business-to-business Bitcoin firm, on the other hand, offers its security services to savvy institutions who have both the motivation and the capacity to aggressively comparison shop. In short, while market failures may prevent competition from effectively protecting individual consumers, a competitive market unfettered by regulatory costs in the business-to-business arena would best enhance security. Moreover, as long as the consumer-facing business is a regulated entity, the protections of a Digital Currency Transmitter license will remain in effect for consumers.

Such a carve-out has been the longstanding norm for companies that are the legal agent of licensed money transmitters.²⁸ Similarly, the Financial Crimes Enforcement Network ("FinCEN") exempts merchant processors and banking intermediaries from duties under the Bank Secrecy Act because these entities are merely intermediaries between banks, which are heavily regulated entities.²⁹ FinCEN also exempts those who only provide "the delivery, communication, or network access services used by a money transmitter to support money

²⁶ Cold storage involves placing the majority of an institution's private keys in offline media, either disconnected computer memory like a thumb-drive, paper, or as memorized passphrases—a so-called brain bank. If keys are not stored on Internet-connected servers, then they can only be accessed by compromising either the individual with access to the key or the physical security surrounding the key. The attack surface could thus be minimized by limiting the number of employees with knowledge of or access to offline key storage, and storing the offline drives or slips of paper in safe-deposit boxes or guarded premises.

²⁷ Amazon, *AWS Case Study: Netflix*, <http://aws.amazon.com/solutions/case-studies/netflix/>.

²⁸ See New York Banking Law § 641 ("[N]or shall any person engage in such business as an agent, except as an agent of a licensee.").

²⁹ 31 C.F.R. § 1010.100(ff)(5)(ii) ("The term "money transmitter" shall not include a person that only: . . . (B) Acts as a payment processor to facilitate the purchase of, or payment of a bill for, a good or service through a clearance and settlement system by agreement with the creditor or seller; (C) Operates a clearance and settlement system or otherwise acts as an intermediary solely between BSA regulated institutions.").

transmission services”³⁰ Digital Currency Transmission regulations should include a similar exemption in order to promote the development of enhanced security tools and services.

J. “non-financial purposes” and “nominal amount”

The technology underlying decentralized digital currencies has promising applications apart from the provision of financial services. Distributed ledgers (or “blockchains”) are used within digital currencies in order to keep a shared, write-only, public record of *who* has been sent *how many* units. Such a ledger may also find use in any area where records need to be authoritative, irreversible, and public.

Several non-financial blockchain projects are already underway. They include distributed systems for Internet domain name registration (e.g. Namecoin), identity and authorization services (e.g. Onename.io), and notary services (e.g. Proof of Existence). Other companies are finding ways to simplify the process of setting up a blockchain for uses specific to a particular client. Much as RedHat helps IBM develop web servers using a particular version of the open-source Linux operating system, a blockchain specialist (e.g. Eris) might help an accounting firm develop a specialized accounting system using blockchains.

Although these uses may have nothing to do with the provision of a financial service to consumers, they may nonetheless employ microtransactions in order to time-stamp some form of tokenized data. For example, a tiny fraction of a bitcoin (worth far less than one cent) may be sent on behalf of a customer in order to irreversibly note the identity of that customer on a public blockchain. The transaction is not intended to be a means of sending or receiving value; it is merely a representation of information that would be difficult to spoof, a verifiable token.

States may fear that such an exemption would create a dangerous loophole: a business could effectively operate as a financial intermediary without licensure as long as it claims that the transactions are merely representing non-financial data. As long as these placeholder transactions are small in value, however, there would be no viable way to use such tools to transmit a meaningful amount of funds. As Muneeb Ali and Ryan Shea of Onename.io have explained:

To illustrate with an example, if someone planned on moving \$100 by breaking it up into 2,500 \$0.04 transactions, they would have to pay a fee on the order of \$0.04 for each and every transaction. Since moving the \$100 from location A to location B would require 2,500 transactions to split up the money and 2,500 transactions to rejoin the money, the mover would be left with scattered denominations totaling \$50 in the middle of the process and absolutely nothing by the end of the process. Second, if the mover ever wanted to reclaim all of those funds and make any use of them, they’d leave an enormous footprint on the blockchain, with thousands of suspicious addresses and transactions that people would be able to inspect and track. Thus, such

³⁰ 31 C.F.R. § 1010.100(ff)(5)(ii)(A).

transactions should be considered impractical for the movement of any kind of funds. It should be noted that any microtransaction that moves funds that are equal to or less than the minimum accepted network fee (today about \$0.04), cannot possibly result in the transmission of any money whatsoever, as demonstrated above. Rather, they would result in the loss of 100% of funds by the time they are rejoined at the end of the process. By extension, orchestrated microtransactions that move funds equal to double the minimum accepted transaction fee would result in the loss of 50% of the total funds by the end of the process, and would still leave an enormous, conspicuous footprint.³¹

Accordingly, non-financial transactions of *nominal* amounts should be outside the scope of Digital Currency Transmission regulation.

2. Exempted Businesses

Digital currency is exciting, in part, because it has brought new life and competition to markets for the provision of financial services. This vibrancy is not the result of careful scientific research or newly patented inventions developed by large technology firms. It is, instead, the result of many small start-up companies working with freely available software and an open network.³²

A. Why Digital Currency Startups Matter

An ecosystem of many small firms is diverse, presenting consumers with many new options for financial transactions. These firms are also capable of scaling massively should their ideas gain widespread consumer traction. That diversity is contingent on low overhead costs inherent to open digital currency networks, which allow a company to securely accept funds from a customer across the world in a matter of minutes for fractions of a penny on the dollar.³³ That network also enables scalability: transactions of many millions of dollars carry the same fees as transfers of pocket change and can be executed just as easily.³⁴ As technological limits on diversity and scalability are lifted, it is important that those limits are

³¹ Muneeb Ali & Ryan Shea, Comments to the New York Department of Financial Services on the Proposed Virtual Currency Regulatory Framework, *available at* http://www.dfs.ny.gov/legal/vcrf_0500/20141022%20VC%20Proposed%20Reg%20Comment%20245%20-%20OneName.pdf

³² Angel.co, a valued trade publication within the technology investment community, lists some 619 companies that are now building Bitcoin related businesses. These companies, however, are small. Average valuation is estimated at \$3.9 million. Angel.co, *Bitcoin Startups*, <https://angel.co/bitcoin> (last accessed Feb. 2015).

³³ Popular hosted wallet provider Coinbase, for example, pays the Bitcoin network typically 0.0002 BTC for transactions of any size. They do not charge this fee to the customer choosing to bear these small costs internally. Coinbase, *Does Coinbase pay bitcoin miner fees?* (Dec 2014) *available at* <https://support.coinbase.com/customer/portal/articles/815435-does-coinbase-pay-bitcoin-miner-fees->.

³⁴ *Id.*

not merely reinstated by a costly regulatory structure that is insensitive to the small size or rapid growth of new and innovative players.

B. Discretion Alone Cannot Accommodate Innovation

The revised BitLicense, for example, rightly contemplates the need to exempt small and innovative digital currency startups from the costly burdens of licensure. However, the BitLicense grants those exemptions, called “conditional licenses,” at the “sole discretion” of the NYDFS Superintendent.³⁵

Discretion can be an important tool for lessening the unduly harsh effects of a regulation, but it should not be the only tool. Discretion also generates regulatory uncertainty: a person never knows whether conduct she has freely engaged in before will suddenly become punishable simply because a government official changed her mind, or was replaced, or—in the worst case—was influenced by a competitor or someone who wished our hypothetical citizen harm.

A formal, rather than discretionary, carve-out for small startups is essential to preserve the freedom to innovate using these technologies, and it should be accomplished in a way that sets clear ex-ante standards and safe-harbors for budding entrepreneurs.

C. Drafting an On-Ramp for Startups

Small startups can be shielded from the costs of regulation by explicitly exempting them from regulation up until the point at which they pose serious consumer protective risks. Shelter should also be granted to businesses that have passed that point and taken appropriate steps to alert the regulator and initiate the process of licensure. The following illustrates such exemptions:

Exempted Businesses.

- A. *Startup On-ramp.* Businesses engaged in Digital Currency Transmission shall be exempted from regulation and licensure under this part if:
 - 1. the business’s aggregate outstanding obligations³⁶ to customers remains below \$5 Million or the equivalent in Digital Currency,

³⁵ BitLicense, *supra* note 3, at § 200.4(c)(3)(i).

³⁶ The threshold for consumer risk should be based upon the amount of consumer funds over which the company has custody. These balances are often referred to within the context of traditional money transmission as “outstanding transmission obligations.” *See, e.g.*, Texas Administrative Code Title 7 Chapter 33 available at [http://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=7&pt=2&ch=33&rl=23](http://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=7&pt=2&ch=33&rl=23).

2. the business has registered with federal authorities as a Money Services Business if applicable, and
 3. the business discloses its unlicensed status to customers.
- B. *Transitional Period.* Businesses that surpass the \$5 Million threshold shall be exempted from regulation and licensure under this part, for a period of time beginning when the Commissioner is notified and lasting for a duration determined at the discretion of the Commissioner but no shorter than six months, if:
1. the business notifies the Commissioner of the increase in volume in a reasonably timely manner, and
 2. the business takes reasonable steps to initiate the process of licensure under this part.

The \$5 million per year transaction level is an appropriate threshold among companies that can pose serious, systemic risks to consumers (e.g. Mt. Gox³⁷), and those where risk-level is tolerable given the benefits that unfettered start-up innovation could bring. However, a regulator could carefully calibrate this threshold as it sees fit. This threshold could change from time to time or be based on some other ex ante specification (e.g. a time-delimited safe-harbor for companies younger than two years), affording the regulator some discretion to adjust regulatory policies in response to observed rates of fraud, consumer harm, or other extenuating circumstances. However, those adjustments should be explicit, apply generally across the industry, and be announced in advance so that firms can plan their compliance strategies efficiently.

3. Interaction with State Money Transmission Law

A Digital Currency Transmitter should not need to acquire both a money transmission license and a digital currency license. Both kinds of licenses aim to accomplish the same thing. They are meant to ensure that companies are well-run, well-capitalized, and adequately serve consumers in a compliant manner. Once a business has acquired a Digital Currency Transmission license, therefore, there is no apparent public benefit from going through the expense and trouble of acquiring a second license. Similarly, if a digital currency business has already obtained a money transmission license there is little to be gained from a separate inquiry and licensing process for digital currency. In short, if a digital currency company is adequately capitalized and vetted by the regulator, what can be gained from a second set of examinations, invoked merely because the company holds fiat currency in addition to digital currency?

³⁷ Robert Mcmillan, *The Inside Story of Mt. Gox, Bitcoin's \$460 Million Disaster*, W1RED (Mar. 3, 2014) <http://www.wired.com/2014/03/bitcoin-exchange/>.

Statutes should clearly specify this interchangeability to avoid any confusion. Courts are increasingly coming to the conclusion that digital currencies such as Bitcoin qualify as “money” under various statutory definitions.³⁸ Relatedly, any individual who “knowingly conducts, controls, manages, supervises, directs, or owns all or part” of a money services business operating without a money transmission license can be fined and imprisoned for up to five years under federal law.³⁹ State legislators surely do not wish a licensed digital currency company to remain technically in violation of federal law (should the requirement to have a *money transmission* license be interpreted strictly). Legislation should therefore clarify that each license satisfies state law requirements to have the other:

Interaction with state money transmission law.

- A. A business licensed as a money transmitter under the Money Transmission Act of this State shall be exempted from regulation and licensure under this division.
- B. A business licensed or exempt from licensure under this division shall be exempted from regulation and licensure under the Money Transmission Act of this State.

4. Capital Requirements

To protect consumers, Digital Currency Transmitters, as with licensed money transmitters, should be required to have sufficient capital reserves on hand to guarantee the solvency of the institution. In money transmission licensing, these reserves can usually be satisfied by holding cash. California, for example, lists cash as an eligible security for the purposes of capital requirements in money transmission licensing.⁴⁰ Allowing the transmitter to hold cash avoids a situation where the business must hold illiquid assets alongside and in duplication to any liquid (*i.e.* cash) assets held in order to quickly make good on outstanding payment orders. Digital currency transmitters should face similar standards. If the business holds digital assets in the form and amount deposited by their customer, it should not also have to hold duplicative reserves in some other form.

³⁸ See *Securities and Exchange Commission v. Shavers*, No. 4:13-CV-416 (E.D. Tex. Aug. 6, 2013) & *United States vs. Ross William Ulbricht*, No. 1:14-CR-00068 (S.D.N.Y. July 9, 2014) (each finding that bitcoins qualify as “money” for purposes for the statutes being enforced in each case).

³⁹ 18 U.S.C. §1960(a).

⁴⁰ See Cal. Fin. Code §2082, *available at*

<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fin&group=02001-03000&file=2081-2089>.

Capital Requirements.

- A. *Permitted Holdings.* In order to satisfy capital requirements set by the commissioner, each licensee shall hold either:
1. digital currency equal in form and quantity to customer deposits, or
 2. high-quality, investment-grade investments.

Bitcoin and cryptocurrency technologies can, in fact, offer superior proof that intermediaries are solvent, and that consumer funds are protected against loss, mismanagement, or the excessive fees of financial intermediaries. All cryptocurrency transactions take place on a public ledger, called the blockchain. These records could indicate, authoritatively, whether funds remain within the organization's publicly- announced customer addresses on the public ledger and whether any fees are being deducted from those addresses. A company could voluntarily, or if required by a regulator, provide real time records of consumer funds as they travel through the intermediary.

Some digital currency companies are already offering this form of real-time disclosure and proof of solvency. Bitreserve, for example, has developed an automated system of transparency that it hopes could even help stem future financial crises:

Bitreserve is the first financial service in the world to publish a real-time, verifiable, proof of solvency. Anyone at any time can confirm that the aggregate amount of value in our members' wallets is matched with assets in our full reserve.

Built for a post-trust world, Bitreserve's real-time transparency system eliminates the opportunities for fraud and destructive risk-taking that have caused the collapse of banks and other financial institutions throughout history.

We're setting this new standard of transparency, accountability and consumer protection with two features called the Reservechain™ and the Reserveledger™. The Reservechain enables anyone to trace a transaction all the way back to the point where it entered our network. The Reserveledger is a real-time publication of every change in our obligations to our members and every change in assets held in our reserve.⁴¹

The technology described by Bitreserve is not unique to this one company. Programmatic money that exists on a public ledger, as enabled by cryptocurrency generally, holds great promise in automating regulatory compliance. Companies must be allowed to hold their

⁴¹ Bitreserve HQ Inc., *Transparency*, <https://bitreserve.org/en/transparency>.

reserves in these currencies to enable the transparency and regulatory compliance systems that bitcoin makes possible.

5. Other Important Considerations

New York was the first state to craft a digital currency-specific transmitter license: the BitLicense. Many states may be tempted to follow not just New York's lead, but its regulatory language as well. This report has sought to promote superior language particularly for defining the scope of licensed activities and exemptions for startups. New York's proposed regulations, however, also contain sections that are simply bad policy regardless of artful or inartful drafting. Adopting New York's anti-money laundering requirements and pre-approval requirements for new products would be ill-advised.

A. AML Requirements

The BitLicense's AML requirements impose costs onto digital currency businesses that are not borne by any other money transmission business under state or federal law.

Specifically, the license has a state-level suspicious activity reporting (SARs) requirement⁴²—the first of its kind for state money transmission law—and a requirement that duplicates the efforts of FinCEN.⁴³ Additionally, the BitLicense's state-level SARs requirement has no lower bound of application (*i.e.*, any transaction regardless of the dollar amount must be reported if suspicious; this contrasts with FinCEN, which generally requires reporting of suspicious transactions only when they are over \$2,000), potentially resulting in a flood of low-value reports that hemorrhage sensitive user-credentials and damage user privacy because of overly-cautious regulatory compliance. The license has a reporting requirement for all transaction over \$10,000⁴⁴ that similarly doubles the efforts of FinCEN.⁴⁵ In drafting the BitLicense, New York's Department of Financial Services has not explained why FinCEN and Federal regulators are failing at their remit and therefore need a second line of state-level reinforcements. Nowhere in New York's, or for that matter, any state's money transmission licensing scheme, are such AML requirements in evidence.

If not remedied, this aspect of the BitLicense will make New York an unlikely home for young, mobile companies free to choose their base of operations and their regulator. Companies may choose to protect user privacy and avoid costly requirements by settling in, for example, the United Kingdom, which has recently shown a sensitive approach to digital currency regulation.⁴⁶ To the extent necessary, these companies may screen the IP addresses of their customers and limit their services when dealing with New Yorkers so as to avoid

⁴² BitLicense, *supra* note 3, at § 200.15 (e)(3).

⁴³ 31 C.F.R. § 1022.320.

⁴⁴ BitLicense, *supra* note 3, at § 200.15(e)(2).

⁴⁵ 31 C.F.R. § 1010.330.

⁴⁶ See Jerry Brito, "The UK plan for Bitcoin is a step in the right direction," *Coin Center* (March 18, 2015), at <http://coincenter.org/2015/03/the-uk-plan-for-bitcoin-is-a-step-in-the-right-direction/>.

embroiling themselves in a legal struggle with inherently large downside risks (time in prison) and little upside (a marginal number of additional customers from New York).

It is entirely unclear what can be gained by duplicating the enforcement efforts of Federal regulators at the state level. However, to the extent that a state wishes to guarantee that licensees have proper AML controls in place, the CSBS takes a reasonable position in its Draft Model Regulatory Framework. It recommends:

Required implementation and compliance with BSA/AML policies, including documentation of such policies. Required compliance with applicable ***federal BSA/AML laws*** and recognition of state examination and enforcement authority of BSA/AML laws[.]

This is standard practice and is echoed in several state money transmission licensing. For example, New York’s regulations state:

d. Compliance with applicable federal requirements shall constitute compliance with the provisions of this Part [Sec. 416.1 Anti-Money Laundering Programs].⁴⁷

Moreover it is echoed by California’s proposed licensing regime for digital currency business, which correctly makes no mention of AML requirements.⁴⁸

If a state is serious about attracting digital currency business, it must not place a greater burden on these firms than it places on traditional money transmitters. It must not place a greater burden on firms than would other, more restrained states or nations. Accordingly, we strongly urge states to either remain silent with regard to AML requirements or, if necessary, to match Federal standards, and specify that “compliance with applicable federal requirements shall constitute compliance with the provisions of this part.”

B. Material Change of Business

New York’s BitLicense requires that licensees seek pre-approval from the superintendent for any:

[N]ew product, service, or activity, or to make a material change to an existing product, service, or activity, involving New York or New York Residents.

Such a requirement is ill-advised. The product release and testing cycle for startups is different than for traditional banks or other financial service companies. Startups will often pivot to new services or do trial tests (*i.e.*, beta testing) of new services in order to probe

⁴⁷ <http://www.dfs.ny.gov/legal/regulations/adoptions/banking/ar416tx.htm>.

⁴⁸ An act to add Division 11 (commencing with Section 26000) to the Financial Code, relating to virtual currency, A.B. 1326, California Legislature 2014-2015 Regular Session (February 27, 2015) *available at* http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1326.

markets for new opportunities. This experimentation is what allows for innovation despite uncertainty.

The innovator does not know, *ex ante*, what will absolutely succeed, providing customers with the exact product they would have wanted all along. Instead, the innovator tries several products, often with a limited number of users or at small scale, in order to see what sticks. Innovators may even try two versions of a service simultaneously; this is referred to as A-B testing. Subtle differences between these two versions can reveal specific consumer preferences that can significantly improve the user experience.

The agility to try several approaches is essential to innovation in the new and rapidly growing financial technology landscape. If New York licensed start-ups are forced to wait for pre-approval every time they seek to test a new service, these start-ups will likely miss opportunities seized by faster, more agile competitors overseas. Other states should not make the same mistake.

Conclusion

To be a leader in the future of financial technology, a state must carefully forge a path toward consumer protection and avoid the pitfalls of inartful and unnecessarily costly regulation. As described throughout this report, this path has several essential steps, that (1) only those with unilateral control be subject to a license requirement; (2) innovative and small startups be protected with a non-discretionary on-ramp; (3) licensed firms need not seek a duplicative money transmitter license; (4) capital requirements may be satisfied by holding digital currency, (5) AML requirements, if absolutely necessary at all, at least match and not exceed federal standards; and that (6) changes of business require notification rather than pre-approval. Each state will independently travel this craggy and dimly-lit terrain. The state that reaps the benefits of new technologies, new jobs, and enhanced financial inclusion will be the state that first discovers a path worth following.