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THE FUTURE INFRASTRUCTURE OF BUSINESS: A PRIMER ON BLOCKCHAIN AND THE EVOLVING REGULATIONS

Blockchain, a digital public ledger that records online transactions, seems to be making news everywhere. Multi-governmental bodies, individual governments, and reputable analysts are declaring blockchain technology to be the “Fourth Industrial Revolution.”¹ The International Monetary Fund dedicated an entire issue of its Finance & Development publication on the ways digital and crypto currencies will reengineer money around the world.² In June 2017, the World Bank launched a Blockchain Innovation Lab. Putting it to practical use, the World Bank issued its own bond on a blockchain raising over AUD \$110 million in 2018 and another AUD \$50 million in a second tranche this August.³

Financial industries have flocked to blockchain in anticipation of unprecedented savings. The *Insurance Journal* published a report by Quincy Analytics estimating that insurance companies could achieve real transaction cost savings of ten to 25% across the value chain.⁴ In a 2019 whitepaper, Accenture estimated that blockchain can provide the mortgage industry with an overall cost-savings of over \$25 billion.⁵ Facebook introduced its plans to launch its Libra currency on a blockchain in 2020, attracting the attention of government regulators around the world.

To many, however, the blockchain feels inaccessible and too complex to understand. This article is a non-technical primer on blockchain, first looking at blockchain’s origins. Second, this article will explore blockchain’s basic functions and how businesses are already finding blockchain applications tremendously useful. Finally, this article will explore the ways some governing bodies are trying, and struggling, to regulate this new and evolving technology.⁶

Blockchain Background

So, what is blockchain? Is understanding blockchain like trying to learn Klingon? It might feel that way, but keep in mind that most people do not need to fully understand technology that they use every day. For example, many of us use the internet for hours each day, but how many people really understand how it works? Most probably do not. The good news is that in many ways, it is not necessary to know the technical details of the internet or, for that matter, a blockchain to appreciate and adopt the technology. Approaching advanced technology by understanding its use is the way most of us incorporate it into our daily lives without unpacking all the complexities behind it.

As always, a deeper understanding is better, but for the majority of the non-developer population, an overview of blockchain’s function and practical use is the way to approach and interact with the technology. The more useful question, then, may not be “what is blockchain” as much as it is “what can blockchain do?”

Bitcoin and the Beginning

For many, what blockchain can do starts with Bitcoin. It is the earliest cryptocurrency on blockchain that has achieved the broadest adoption, attracting the fervor of businesses and speculators alike. Bitcoin's volatility and scandals make the front page of every major news outlet and fortunes have been built and lost in Bitcoin's wake. At a market capitalization of over \$160 billion, Bitcoin's influence is no longer disputed.

Bitcoin's origin story is shrouded in mystery, although the prevailing understanding is that Bitcoin was originally created by Satoshi Nakamoto. Satoshi Nakamoto's actual identity remains ¹⁴heavily debated. Nevertheless, many believe Bitcoin started on August 18, 2008 when Satoshi Nakamoto published a whitepaper entitled "*Bitcoin: A Peer to Peer Electronic Cash System.*" (<https://bitcoin.org/bitcoin.pdf>). The white paper provided a model for a decentralized cash system through coding and cryptography, by creating Bitcoin, a digital asset that would be recorded on a blockchain.

Satoshi Nakamoto's whitepaper addressed the problem of how to make sure electronic cash was tracked and spent without duplication. For example, when a customer makes an electronic payment through his bank account, the bank makes sure the payment is tied to the actual funds in the customer's account. The bank deducts the payment from the account on a ledger and at the end of the day, the customer and anyone he pays trust that the bank will accurately verify and reconcile all transactions against the recorded cash in the account, how the customer, the bank, and the payee know that payment has been accounted for and not duplicated.

Removing the bank from the equation, how could this electronic transfer work? In the digital world, records can easily be changed and duplicated endlessly. A personal ledger would be wholly unreliable and unaccountable. No one could verify if the person was accurately tracking his funds or whether he was sending funds from the account that had already been sent to someone else. There would be serious problems of trust and risk of duplication without the bank as the trusted middleman.

Satoshi Nakamoto's solution was to create a "trustless" ledger. Simplified, his idea was to create a public ledger that everyone could look at that was completely transparent. Each electronic "coin" would have a cryptographic, unique identity that would be tracked on this public ledger. As the coin moved from payment to payment, every movement would be visible and tracked on the public ledger. The ledger would not need to rely on a bank or anyone else to make sure there were no duplications or to reconcile against a physical account.

This ledger would not be hosted on a server, controlled and owned by a government or authority, but instead would be distributed on computers around the world called "nodes." Anyone with the right equipment could run a node, and this distribution of nodes to be run by millions of computers around the world makes a public blockchain a decentralized and "distributed" ledger. Every time information was entered on the ledger for a transfer of Bitcoin, a number of these nodes had to all agree to the entry. After the entry was approved, that entry into the ledger would be stored in a block which would then be chronologically linked to the prior block, thereby creating a chain of blocks: blockchain.

To make this electronic cash system reliable, the ledger had to be immutable, meaning no one could get on the ledger and erase an entry. The ledger also has to be transparent so anyone with a computer could see every entry on the ledger.

This new decentralized system of electronic cash offered a number of attractive features over the centralized money system that currently relies on banks, credit card companies, and other centralized authorities. The decentralized nature of a blockchain eliminated the risk of a centralized authority controlling the cash system and deciding all facets of transfer policies, including the order of transfers and fees. Blockchain eliminated the risk of the centralized authority being hacked, held hostage, or otherwise captured. Blockchain also eliminated the middleman, reducing the time, fees, and human errors associated with more intermediaries. Satoshi Nakamoto had thought through these issues to present a truly innovative change to the old cash system.

Before Bitcoin, After Bitcoin, and Ethereum

In contemplating blockchain, it should be noted that virtual currency had a life of its own in gaming before the cryptocurrency revolution. Although cryptographically secured chain of blocks had been introduced in the early '90s, the popularization of virtual currencies took place in the online gaming world as part of in-game purchases through games like Mario Brothers and its Mushroom coins in the early '80s.

In 2003, the release of a game called MapleStory was a turning point. It allowed micro-purchases of online coins via digital transactions and online payments. MapleStory also helped usher in more interchange between coins or tokens in the gaming world and currencies in the “meatspace,” a gamer reference to the “real world.”

In 2004, the wildly popular online game World of Warcraft (“WOW”) was released with its in-game currency that could be used to buy weapons, armor repair, and other things. Eventually, rare items began to be sold outside the game. Fungi Tunics were sold for 50,000 Norathian platinum pieces that could take players 150 hours to earn but could be bought on eBay for \$500.00.⁷

Virtual, digital currency was being converted to fiat money, also known as money backed by a government like the US dollar or Japanese Yen, and in a short period of time, the separation between online gaming and real-world currencies became a thinning membrane.

One dedicated WOW gamer who became interested in Bitcoin was a teenager named Vitalik Buterin. In 2010, he experienced a loss in WOW that disenchanted and devastated him. In explaining how the loss led him to blockchain, Buterin stated: “[O]ne day Blizzard [from WOW] removed the damage component from my beloved warlock’s Siphon Life spell. I cried myself to sleep, and on that day, I realized what horrors centralized services can bring. I soon decided to quit.”⁸

He turned his interest instead to Bitcoin and the decentralized blockchain. Eventually finding Bitcoin too limiting, he envisioned a protocol on blockchain that was programmable with “if then” *15 statements instead of just a ledger. In late 2013, Buterin “birthed” Ethereum and its token, the Ether. Since then, Ether has become the second largest cryptocurrency in the world reaching a market capitalization of over \$184 billion in 2018 and Ethereum has become the dominant protocol for programmable code on a blockchain.

While an Ethereum-based blockchain records exchanges of its Ether tokens like Bitcoin does, Ethereum’s extraordinary potential is that it can also be easily coded to run more complex transactions called “Smart Contracts” that are basically crafted from “if ... then ...” conditional statements. Smart contracts can be used as the basis of Decentralized Applications (%7F*Dapps*”). A key feature of Ethereum that helped usher in the blockchain revolution was that it also provided a way for developers to create their own cryptocurrencies, “ERC-20” tokens that are built on the platform and compatible with Ethers.

In 2016-2017, this ability for developers to create Dapps and to easily create their own ERC-20 tokens to run the transactions resulted in an explosion of projects and cryptocurrencies. Developers created ERC-20 tokens with unprecedented ease and electronically issued them to purchasers all over the world through the internet as “ICOs” or “initial coin offerings,” a nomenclature that intentionally and unfortunately evoked IPOs. In 2017, over \$10 billion was raised by the issuance and sales of these kinds of cryptocurrencies, most of them ERC-20 tokens; in 2018, over \$11.4 billion was raised. In the beginning, these ICOs were almost entirely unregulated.

The frenzy for cryptocurrencies resulted in a proliferation of exchanges in the business of trading tokens for other tokens or converting tokens to government “fiat” currencies like the dollar or the yen. Exchanges like Coinbase, Kraken, Bittrex, Bitstamp, Poloniex, Shapeshift, and others have a market cap of over \$300 billion and exchange around \$67 billion per day, more or less, depending on volatility of the market. Most of the bigger exchanges *16 are custodial, in that they hold the consumers’ tokens until a trade takes place and are centralized. Decentralized exchanges are being developed that are non-custodial.

Another variation of blockchain has become popular with large organizations trying to capture the cost-savings and efficiencies that blockchains can potentially offer, known as “private” or “permissioned” blockchains. The ““privacy” refers to blockchains that are accessed by permission and are not open to the public. These restricted blockchains are being developed and tested for back office and middle office purposes like supply chain management, tracking, investment bank processing, insurance administration, shipping processes, distribution services, and intergovernmental agencies’ administration.

BLOCKCHAIN USE CASES

What businesses, investors, analysts, and everyone else interested in blockchain want to see are “use cases” that provide real

world benefits.

In August 2018, PricewaterhouseCoopers, PwC, surveyed 600 executives from fifteen territories. Eighty four percent said their companies are involved in blockchain.⁹

Some of the most advanced use cases by major corporations, intergovernmental agencies, and governments around the world have been in the following areas.

Enterprise

Corporations are interested in streamlining enterprise, or back and middle office, systems using blockchain technology to reduce intermediaries and improve transparency and lower operational costs. Enterprise Ethereum Alliance is a group of over two hundred members, including JP Morgan, British Petroleum, MasterCard, Intel, Microsoft, Ernst and Young, Royal Bank of Canada, and Pfizer who are working on blockchain enterprise projects.

B3i is a consortium of eighteen major insurance market participants around the world who are working on insurance applications using the blockchain. B3i launched its first product, a property catastrophe excess of loss reinsurance product, in July 2019, and are now preparing for renewals in the new year.¹⁰ It is estimated that insurance companies could save ten to twenty-five percent of their costs if they put their operation processes, such as underwriting, claims processing, and client ID on the blockchain.¹¹

In addition, decentralized ledger technology can bring insurance and other financial services to poor and underserved areas. Etherisc, an insurtech startup, joined with Aon and Oxfam to provide parametric insurance, where a set amount is paid on occurrence of an objective event. Etherisc provided its first payout this November in its first season of blockchain-based delivery of microinsurance to smallholder paddy field farmers in Sri Lanka.¹² Etherisc allows anyone with a smartphone or computer to access insurance services.

Shipping giant Maersk is implementing a platform called TradeLens on IBM's Hyperledger DLT to increase efficiency, reduce administrative time, and remove redundancy in global shipping. Trade-Lens will have 94 participants and a network of twenty port and terminal operators, spanning 234 maritime gateways. <https://www.tradelens.com/> As part of Cargosmart, nine major ocean carriers and terminal operators are developing the Global Shipping Business Network, a blockchain platform that has recently finished testing an interoperability platform linked with a Hong Kong bank.

Cryptocurrencies

Cryptocurrencies are probably the most visible areas of interest, in part, because they have the potential to attract retail markets.¹³ The top one hundred cryptocurrencies in the world have a market capitalization of over \$250 billion as of November 6, 2019. But a lot of the use cases that are making headlines are private blockchains. JP Morgan has issued a token, JPM Coin, for a private blockchain. The JPM Coin is expected to be used on a portion of the \$6 trillion JP Morgan moves around the world every day for corporations in its wholesale payments business.¹⁴

One of the most globally disruptive developments has been Facebook's anticipated launch of its Libra token. Libra has caused regulators around the world to break out in hives and forced a number of jurisdictions to take regulatory action. Libra is a private digital currency, rather than a true public cryptocurrency, in that it uses a few trusted entities to keep track of the ledger, eliminates a government's central bank, and instead relies on 28 large corporations in the Libra Association. To stabilize its value, it is pegged to a group of low-volatility assets that act as a floor for the value of the Libra coin.¹⁵ The Libra Association is seeking to register as a payment system in Switzerland. France and Germany, however, have vowed to block Libra. China is quickly pushing ahead on its People's Bank of China digital currency in response to the threat of Libra to national currencies. Stay tuned.

Supply Chain

Blockchain's transparency and tracking feature make it perfect for supply chain tracking and controls. One example is IBM's Food Trust network which enables food traceability from farm to retailer and beyond. In the event of a tainted food crisis, the origin can quickly be determined. Walmart and French supermarket giant Carrefour are among the users.¹⁶

Blockchain is also used to track diamonds to ensure origin and authenticity. DeBeers and Clara Diamond Solutions and Trustchain have blockchain solutions. Volkswagen and Ford are looking to track needed minerals for auto production on a blockchain. Blockchain has the potential to streamline and improve tracking in any industry with a supply chain, monitoring, authenticity, or origin concerns.

Cybersecurity

Many United States governmental agencies are also interested in the benefits of blockchain technology, in particular, the Department of Defense (DoD). ***17** Cybersecurity is primary for DoD's supply chain, data integrity, messaging, hardware systems communication, and military logistics applications. The recently proposed bill for National Defense Authorization Act for Fiscal Year 2020 (H.R. 2500) mandates that the DoD perform a comprehensive study of blockchain and deliver it to Congress within six months. The DoD must report on how DLT may be used by the DoD to, among other things, "improve cybersecurity ..., and improve the efficiency of defense logistics and supply chain operations."

Identity

A use case that could be applicable across many industries is the establishment of digital identity.¹⁷ The current systems of checking identification are inefficient, with costs for human error and delay. Blockchain can enable the creation of a truly "self-sovereign ID" wherein an individual controls his or her verified identification rather than a centralized organization or government. A secure, immutable, private ID would not only increase business and consumer interaction efficiency but be of enormous value to those in vulnerable straits such as the homeless and refugees. Using this identity technology, MIT has provided graduates a digital diploma that is stored on a blockchain on a Blockcert Wallet mobile app, so that graduates can prove diploma verification without relying on MIT's administration.¹⁸

REGULATIONS

Blockchain is restructuring the way money is moved and controlled, how back and middle offices are run, and supply chains are improved, but the fact is that it is a new technology that is still rapidly evolving, creating social, economic and legal uncertainties. Blockchain has changed the world so quickly that governments and their agencies are often unable to keep pace with a clear, unified approach. Below are legal highlights of key federal agencies and some of the more innovative approaches that the states and other countries have taken, providing a snapshot in time in a shifting legal landscape that changes on an almost weekly basis.

Federal regulations in the United States

With an enormous market capitalization and extreme volatility, the cryptocurrencies markets create significant legal concerns for regulators. A big question is how the federal government and other nations will regulate tokens on the blockchain.

SEC

The Securities and Exchange Commission ("SEC") has been slow to provide clear guidance and has appeared to reverse course over time, adding more uncertainty to the problem. As a leading securities regulator in the world, its confusion and misguidance has driven blockchain development away from the United States at a critical juncture.

William Hinman, director of Division of Corporation Finance of the SEC, stated in a speech at the Yahoo All Markets Summit: Crypto in 2018 that Bitcoin, and currently Ethereum's Ethers, are no longer securities because of the extent that they are decentralized. But earlier in the same year, the SEC had indicated that just about every token was a security.¹⁹ So was

Hinman's statement inconsistent with the formal SEC statement? The SEC offered no clear guidance other than to say that a laundromat token is not a security and then to point to the "Howey test," referring to the holding in *Securities Exchange Commission v. W. J. Howey Co.*, 328 U.S. 293 (1946). In *Howey*, the Supreme Court stated that a transaction is a security if it is an investment of money in a common enterprise with the expectation of profit solely through the efforts of the promoter or manager. This formal definition alone, however, did little to help clarify how ***18** some characteristics of tokens should be interpreted under the *Howey* test. For example, at what point would a token like the Ether stop being a security? Where along the path does a centralized promoter become decentralized?

While waiting for the SEC to respond, a number of developers began to ringfence the United States, not allowing sale of their tokens to United States citizens. For example, Poloniex, an exchange, geofenced nine tokens, meaning Poloniex no longer allowed exchange of these tokens by United States citizens, due to the uncertainty of the SEC's stance on tokens as securities.²⁰

In April 2019, the SEC finally announced a *Framework for "Investment Analysis" of Digital Assets* in Public Statement 4/3/2019.²¹ It seems, however, this guidance may be too little too late. The SEC's delay in issuing guidance has created the kind of uncertainty that simultaneously encouraged unscrupulous actors to take advantage of ambiguous regulations and issue questionable tokens in the United States, while driving away conscientious developers and entrepreneurs, to other jurisdictions where the laws are more well-developed. Unfortunately, this could leave the United States behind in a field that has been hailed as the "future of business." It is yet to be seen if the SEC can improve its response time in issuing clear guidance on future matters to reverse the effect it created.

FinCEN

The Financial Crimes Enforcement Network ("FinCEN") recently released FinCEN Guidance, FIN-2019-G001, Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies. The FinCEN Guidance explains who may be considered a money transmitter in the blockchain ecosystem. A money transmitter must register with FinCEN and comply with FinCEN regulations including Know Your Client ("KYC") and Anti Money Laundering ("AML") regulations under what is known as the "travel rule." The director of FinCEN has recently stated that FinCEN expects full compliance by convertible virtual currency exchanges.

CFTC

The Commodities and Futures Trading Commission ("CFTC") has been somewhat friendlier to virtual currencies than other agencies. The Chicago Mercantile Exchange and CBOE Global Markets Inc., who can self-certify products under the Commodity Exchange Act, self-certified Bitcoin futures contracts. The CFTC did nothing in response, noting its limited ability to deny self-certification, but in an attempt to show some teeth, it did say that these future contracts would receive heightened review.²²

Despite this "friendliness," the CFTC has also exerted jurisdiction over all virtual currencies. The CFTC has argued that because virtual currencies can have futures, a spot exchange (or basically any sale and purchase) is an exchange of a commodity for purposes of its jurisdiction. It can then enforce anti-fraud authority over all interstate sales. The courts have agreed with the CFTC so far, but this holding may not stand up on appeal in the future.²³

OFAC

In 2018, the United States Treasury Department's Office of Foreign Assets Control ("OFAC") released guidance, issued in the form of Frequently Asked Questions ("FAQs"), stating that transactions involving cryptocurrencies will be treated the same as other transactions. American individuals will have the same sanctions and compliance obligations regardless of whether a transaction is denominated in digital currency or fiat currency.²⁴

IRS

In 2014, the Internal Revenue Service (“IRS”) issued [IRS Notice 2014-21](#) stating that it treats virtual currency as property for tax purposes. A sale or exchange of virtual currency for fiat or other property requires a calculation of the basis and gain or loss similar to other property that is a capital asset. Virtual currency paid as wages requires withholding and reporting on a W2. A payment over \$600 to an independent contractor requires a Form 1099-MISC. These reporting requirements create a significant burden for transactions involving small amounts of virtual currency, for instance, for purchase of low-priced everyday retail items or regular trading consisting of numerous small transactions.

The IRS believes many, if not most, virtual currency transactions are not being reported. In 2017, the IRS took Coinbase, one of the largest virtual currency exchanges, to court asking it to order Coinbase to turn over personal information on its 5.9 million customers. The IRS eventually narrowed its request to 14,000 customers. The court agreed with the IRS, but further narrowed the information that it ordered Coinbase to produce.²⁵

United States agencies commonly take disparate positions in their efforts to fulfill their different federal mandates, but in this case, with every major agency taking a different regulatory position, the regulatory whiplash strongly suggests that the regulators do not have a handle on the big picture or any semblance of a coordinated approach. The uncertainty has played a role in driving blockchain projects with cryptocurrency features away from the United States.

Laws in Other Countries

Where are blockchain projects going when they leave or avoid the United States? Below are legal developments in some of the more active jurisdictions attracting and trying to attract blockchain developers and their projects around the world.

European Union and GDPR

One of the biggest challenges in regulation of blockchain technology in European Union (“EU”) countries is the General Data Protection Regulation (“GDPR”), enacted by the EU on May 25, 2018.²⁶

The regulation is meant to protect ***19** the personal information and privacy of consumers when their data is collected by businesses. How privacy works with respect to blockchain technology was not a focus of GDPR and not surprisingly, the regulation has an imperfect fit with some of the key features of a public blockchain, including the fact that information on a public blockchain cannot be erased and is permanently transparent.

The GDPR codified the “Right to be Forgotten” that creates a right for a consumer to demand that a company remove the consumer’s personal information from company records unless retention is required or necessitated by law or business. Companies are also responsible for proactively removing data that is inadequate, irrelevant, or no longer relevant. None of this removal is possible on a public blockchain. Public blockchains are immutable, meaning permanent and in fact, unchangeable in any way. This immutability is considered a feature to increase trust in the network but stands at odds with the GDPR.

GDPR is also based on an underlying assumption of centralization: that in relation to each personal data point, there is a “data controller,” a contact point who is responsible for compliance and from whom consumers can demand redress and enforcement of their rights under the law. Public blockchains, however, are distributed databases that are decentralized. Accordingly, there is not and cannot be a central contact point. The European Parliamentary Research Service issued a paper discussing these challenges, but there are no clear solutions yet.²⁷

Switzerland

Switzerland has encouraged blockchain companies to make their home among the snowy peaks, alpenhorns, and Almatrieben (cow parades). Blockchain projects have flocked to Zug ever since Ethereum set up there, garnering the nickname Crypto Valley. In 2018, the Swiss Financial Market Supervisory Authority (FINMA) issued guidance classifying tokens in a three-tier system:

*20 1. Payment Tokens, that are used for payment and regulated as payment processors, not securities; 2. Utility Tokens, that are not securities if they are solely for use or to be exchanged for a service at time of the ICO; and 3. Asset Tokens, that are securities. In addition, tokens can be Hybrid Tokens, meaning they can be categorized as more than one of the tiers.²⁸

FINMA requires payments on a blockchain to comply with anti-money laundering regulations (“AML”) by verifying customer’s identities, monitoring AML risks, and reporting suspicious activity to banking regulators.²⁹ Despite some uncertainty in interpreting the regulations in Switzerland, many crypto projects are still looking to domicile in Switzerland. In fact, Facebook plans to launch Libra through a Swiss foundation and is attempting to have Libra registered as a payment token.

Malta

In the hopes of establishing itself as a center for blockchain technology, Malta’s parliament passed three bills to establish a regulatory framework for addressing blockchain technology: the Virtual Financial Assets Act (“VFAA”), the Malta Digital Innovation Authority Act, and the Innovative Technology Arrangements and Services Act. Distributed Ledger Technology Assets are classified in four categories: (1) Electronic Money; (2) Financial Instruments intrinsic to DLT; (3) Virtual Tokens, that are a form of utility tokens; and (4) Virtual Financial Assets, that is a catchall for remaining digital assets. Malta has attracted several exchanges and related businesses, but it is unclear such a small jurisdiction with limited resources can maintain a blockchain industry through a handful of favorable local laws.

ASIA

Singapore

Singapore is considered a crypto-haven due to its significant access to the Asian markets in combination with its welcoming and active regulatory environment. The Monetary Authority of Singapore (“MAS”) issued A Guide to Digital Token Offerings in November 2018.³⁰

MAS has also set up a Fintech Regulatory Sandbox for which fintech developers apply to be accepted. If chosen, they work with regulators to test and to implement their new technology on a temporary, limited basis. This interaction educates the developers on applicable laws and the regulators on the new technology.

Currently, cryptocurrencies are taxed under the Goods and Services tax (“GST”), but to increase its competitiveness as a haven, Singapore is planning to exempt cryptocurrencies that are intended to be a medium of exchange from the GST in 2020.

Japan

Japan is forward-thinking in blockchain development which it believes is an area promising economic growth. Japan is known for some of the most sophisticated and progressive, though stringent, cryptocurrency regulation in the world, instituted to produce an efficient market. In June 2019, Japan presented a manual of cryptocurrency regulation at the G20 Summit encouraging international cooperation in regulating blockchain and digital assets.³¹ On May 31, 2019, Japan amended its Payment Services Act and Financial Instruments and Exchange Act, clarifying and tightening regulations of ““cryptographic assets,” the term chosen to replace “virtual currency.”³²

South Korea

South Korea has declared Busan, a “regulation free zone” for blockchain development, like a blockchain sandbox. Chosen businesses will be supported using a digital voucher, essentially a stable coin.

President Moon Jae-In stated: “[w]hile regulatory innovation in the era of industrialization was a matter of choice, it is now a

question of survival as we are experiencing the fourth industrial revolution, characterized by fusions across industries and fields.”³³

China

China has restricted cryptocurrencies, banning financial institutions from handling Bitcoin transactions in 2013. In 2017, China declared all ICOs illegal. Trading in cryptocurrencies is also banned.

But the hesitancy to embrace cryptocurrency markets in general may actually be part of the government’s efforts to set the stage for the launch of its own digital currency. The Peoples Bank of China (“PBOC”) has announced the coming launch of its digital currency to replace the physical Chinese yuan in circulation. Consumers and businesses would set up a mobile digital wallet and swap their yuan for the digital currency. Every transaction is expected to be tracked by the government.³⁴ The PBOC coin will be a centralized digital currency rather than a true cryptocurrency.

In October 2019, China passed its first cryptography law, effective on January 1, 2020. The law is aimed to encourage and support cryptography businesses and to ensure the security of cyberspace and information. It appears to be another step toward supporting the launch of China’s own digital currency.³⁵

U.S. STATE LAWS

Not surprisingly, the states are trying a variety of different approaches regarding cryptocurrencies and blockchain. As has historically been true, the states have taken the lead in testing more innovative and experimental approaches than the federal government. New York state jumped in quickly with a “BitLicense” scheme on August 8, 2015 that has failed to gain traction with businesses because it is considered too onerous. At least ten companies stated they were stopping all business in New York due to the regulations.

[https:// web.archive.org/web/20170328214158/http://www.dfs.ny.gov/legal/regulations/adoption/dfsp200t.pdf](https://web.archive.org/web/20170328214158/http://www.dfs.ny.gov/legal/regulations/adoption/dfsp200t.pdf). *22 New York took about three years to approve a license; there are currently only sixteen licenses issued. There is a rumor that the state legislature may be putting together a task force to revisit the matter in the future.

In 2017, Delaware passed a law allowing corporations to use blockchain for corporate records, including corporation stock ledgers.

<https://legiscan.com/DE/bill/SB69/2017>. Arizona and Wyoming have sought to establish centers of blockchain innovation as a way to spur economic development. Arizona has set up a FinTech sandbox, *<https://www.azag.gov/fintech>*, and passed laws validating signatures and contracts on the blockchain.

<https://legiscan.com/AZ/bill/HB2417/2017>. Wyoming has passed thirteen blockchain laws in a two-year period. Wyoming has set up three classifications of digital assets: Digital Securities, Digital Consumer Assets, and Virtual Currencies. *<https://wyoleg.gov/Legislation/2019/sf0125>*. Wyoming also allows banks to be digital asset custodians. In addition, Wyoming authorized a FinTech Sandbox. *<https://wyoleg.gov/Legislation/2019/HB0057>*. Nevada and Colorado have also been pursuing friendly blockchain regulation.

At least twenty-two states have enacted legislation related to virtual currency while at least eighteen states have no laws specifically dealing with blockchain or cryptocurrency. A number of states have validated smart contracts and/or are exploring the use of blockchain for particular governmental services.

Under state laws, one particular concern for cryptocurrencies are the money transmitter laws. Money transmitter laws regulate the licensing and authorize enforcement against unlicensed money transmitters, a definition that can be as broad as anyone who transmits money for commercial purposes. The laws and their interpretations vary among the states, but usually may include licensing fees, extensive applications, ongoing compliance, a minimum net worth, and surety bonds and/or reserves. The problem for the cryptocurrency industry is whether cryptocurrencies are considered money and whether their transactions and other exchanges then fall within money transmitter laws.

Cryptocurrency exchanges are critical to blockchain technology as they provide avenues of liquidity, allowing the exchange of tokens for other tokens or fiat currency like dollars or yen. Exchanges have been able to operate in forty-nine states in compliance with their money transmitter laws, all except for Hawaii.

An interpretation of the money transmitter law in Hawaii, Hawaii Revised Statutes Chapter 489D, has chased away all exchanges. The interpretation requires an exchange to hold a fiat currency reserve in the same amount it already holds in digital currency, essentially doubling the amount it must hold. A bill was introduced in the 2018 Legislature to specifically address the problem by allowing a reserve to be in digital currency but the bill was not passed. In March 2020, DBEDT's Hawaii Technology Development Corporation launched the Digital Currency Innovation Lab (DCIL), a sandbox that exempts lab participants from enforcement of the money transmitter laws. For everyone else, however, money transmitter laws in Hawaii continue to apply and restrict liquidity and development of blockchain projects. This regulatory restriction must be addressed, or Hawaii will be left behind as other jurisdictions make the quantum leap to understanding and working with this rapidly growing "future infrastructure of business."

CONCLUSION

Although these are the early days of blockchain, it has already changed the way business is done. The full force of its impact is yet to come, but the sooner laws thoughtfully and clearly address the technology, the better prepared we will all be to guard against its challenges and harness its advantages.

Footnotes

^{a1} *J.P. Schmidt is Principal of Abaris Global, former Hawaii State Insurance Commissioner, and Ethereum Foundation Advisor. He completed the MIT Sloan Certificate for Blockchain Technologies: Business Innovation and Application program. Tung Chan is a former General Counsel of Ethereum Foundation, former Securities regulator, and advisor to blockchain start-ups.*

¹ *See, World Economic Forum, Fourth Industrial Revolution for the Earth Series; Building Block(chain)s for a Better Planet, Sept 2018.*

² International Monetary Fund, FINANCE & DEVELOPMENT, June 2018, Volume 55, Number 2. <https://www.imf.org/external/pubs/ft/fandd/2018/06/pdf/fd0618.pdf>.

³ <https://www.worldbank.org/en/news/press-release/2018/08/23/world-bank-prices-first-global-blockchain-bond-raising-a110-million>;
<https://www.worldbank.org/en/news/press-release/2019/08/16/world-bank-issues-second-tranche-of-blockchain-bond-via-bond-i>.

⁴ <https://www.insurancejournal.com/research/app/uploads/2018/01/blockchain101.pdf>.

⁵ <https://www.mba.org/Documents/Member%20White%20Papers/Accenture%20-%20Mortgage%20and%20Blockchain%202019.04.23.pdf>.

⁶ This article is not intended to be financial or legal advice. For such advice for particular situations, contact a personal financial advisor or lawyer.

⁷ <https://medium.com/singulardtv/how-video-games-helped-pave-the-way-for-cryptocurrency-f930521eef55>.

⁸ https://about.me/vitalik_buterin.

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