

SENATE JUDICIARY COMMITTEE
Senator Thomas Umberg, Chair
2021-2022 Regular Session

SB 638 (Hertzberg)
Version: April 8, 2021
Hearing Date: April 13, 2021
Fiscal: Yes
Urgency: No
JT

SUBJECT

Corporate records: articles of incorporation: blockchain technology

DIGEST

This bill extends the sunset on the authorization for certain corporations to use blockchain to record stock transactions, and alters the definition of that term.

EXECUTIVE SUMMARY

The enigmatic progenitor of the cryptocurrency Bitcoin, Satoshi Nakamoto, developed a database technology known as blockchain to facilitate direct peer-to-peer Bitcoin transactions without recourse to a trusted third-party intermediary, such as PayPal or a credit card company. Rather than maintaining a record of transactions on a centralized database controlled by a single party, Bitcoin's version of blockchain relies on a global, open network of computers to track and verify bitcoin transactions and cryptographically link them with existing blocks of verified transactions. The distributed, redundant nature of the blockchain makes it resistant to corruption, thus preventing the double spending of Bitcoins without a central monetary authority.

Whether cryptocurrencies end up revolutionizing the global monetary system or collapsing like a modern version of tulipmania, many have argued that the more consequential innovation may well prove to be blockchain itself. Recognizing this possibility, the author carried SB 838 (Hertzberg, Ch. 889, Stats. 2018), which authorized California corporations to use blockchain technology to record the transfer and issuance of stock until 2022. This bill would extend that authorization until January 1, 2027, and would change the definition of "blockchain" for those purposes.

The bill is supported by the Blockchain Advocacy Coalition and has no known opposition. The bill was previously heard in the Senate Banking and Financial Institutions and passed out on a 9-0 vote.

PROPOSED CHANGES TO THE LAW

Existing law:

- 1) Establishes the General Corporation Law (Corp. Code § 100 et seq.)¹ and the Social Purpose Corporation Act. (§ 2500 et seq.), which respectively provide that a corporation or a social purpose corporation may be formed by executing and filing articles of incorporation (§§ 200(a) & 2600(a)).
- 2) Requires California corporations wishing to issue securities to comply with the Corporate Securities Law of 1968 (§ 25000 et seq.), which is administered by the Department of Business Oversight.
- 3) Specifies various provisions that may be contained in a corporation's or a social purpose corporation's articles of incorporation, including provisions applicable to the issuance and transfer of shares. (§ 204 & 2603.)
- 4) Provides that a corporation may adopt a system of issuance, recordation, and transfer of its shares by electronic or other means, as specified. (§ 416(b).)
- 5) Authorizes, until January 1, 2022, a corporation or a social purpose corporation that does not have outstanding securities listed on specified securities exchanges to adopt provisions within its articles of incorporation authorizing records administered by or on behalf of the corporation in which the names of all of the corporation's stockholders of record, the address and number of shares registered in the name of each of those stockholders, and all issuances and transfers of stock of the corporation to be recorded and kept on or by means of blockchain technology, as specified.
- 6) Defines "blockchain technology" for these purposes to mean a mathematically secured, chronological, and decentralized consensus ledger or database.

This bill:

- 1) Extends the sunset date on the authority to use blockchain to record stock transactions to January 1, 2027.
- 2) Revises the definition of "blockchain technology" to mean a decentralized data system, in which the data stored is mathematically verifiable, that uses distributed ledgers or databases to store specialized data in the permanent order of transactions recorded.

¹ All further section references are to the Corporations Code unless otherwise indicated.

- 3) Clarifies that the bill's provisions do not alter or affect a corporation's obligations to comply with applicable privacy laws.

COMMENTS

1. What is blockchain?

There is no universal definition of blockchain technology. Nakamoto described it as an electronic “system for participants to agree on a single history of order in which [publicly-announced transactions] were received.”² A study commissioned by the Vermont Legislature describes blockchain as follows:

A blockchain is an electronic ledger of digital records, events, or transactions that are cryptographically hashed, authenticated, and maintained through a “distributed” or “shared” network of participants using a group consensus protocol. Much like a checkbook is a ledger of one's personal financial transactions, with each entry indicating the details of a particular transaction (withdrawal or deposit, recipient and sender, amount, date, etc.), the blockchain is a complete listing of all transactions, whether financial or otherwise. However, unlike a checkbook, the blockchain is distributed among thousands of computers or “nodes” with a process for validating transactions that utilizes a group-consensus protocol. Making an addition to a blockchain ledger requires the approval of the network at large, making retrospective changes essentially impossible.³

Vitalik Buterin, the founder of Ethereum (a second generation public blockchain-based network) defines blockchain as follows:

[A] blockchain is a shared digital ledger or database that maintains a continuously growing list of transactions among participating parties regarding digital assets – together described as “blocks.” The linear and chronological order of transactions in a chain will be extended with another transaction link that is added to the block once an additional transaction is validated, verified, and completed. The chain of transactions is distributed to a limitless number of participants – so-called “nodes” – around the world in a public or private peer-to-peer network.”

Bitcoin is illustrative. On the Bitcoin network, when a user wishes to make a transaction, data associated with the transaction are timestamped, encrypted, and

² Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System* (2008) at 2 <https://bitcoin.org/bitcoin.pdf> (as of Mar. 28, 2021).

³ *Blockchain Technology: Opportunities and Risks* (2016), State of Vermont (“Vermont Study”) at 3 <https://legislature.vermont.gov/assets/Legislative-Reports/blockchain-technology-report-final.pdf> (as of Mar. 28, 2021).

broadcast across the network, and computers on the network validate the transaction and its provenance. Verified transactions are bundled into “blocks” of data that are cryptographically linked to the existing sequence of validated blocks, forming a “chain” that is reinforced with each subsequent block. Because block creation is computationally intensive, computers that create valid blocks are rewarded with Bitcoins – a process that becomes more computationally demanding as the chain grows and that yields fewer Bitcoin as the finite supply of Bitcoin is exhausted. A block is appended to the chain only when a majority of participant computers recognize its validity. Corruption of the chain is practically infeasible, as retroactively tampering with a block in the chain requires alteration of all subsequent blocks, a task that requires a cost-prohibitive amount of computing power or collusion of the majority of participant computers.

However, the cost of Bitcoin’s security is inefficiency. The computing power required to replicate and verify the same information across a vast network of computers is enormous.⁴ Blockchain is “an extraordinary solution, and it comes at an extraordinary price. A large proportion of the entire world’s computing resource has been put to work contributing to the consensus algorithm that continuously watches the state of the ledger. And it has to be so, in order to ward off brute force criminal attack.”⁵

A more efficient alternative to the system used by Bitcoin is private, or “permissioned,” systems that use a similar underlying protocol without the revolutionary, decentralized governance mechanism of a public blockchain. A recent article in *Slate* describes why permissioned systems are more attractive to businesses:

In a typical permissioned system, all the participants will agree in advance about how the network should be run and sign a legal agreement setting out the rules. For example, imagine a consortium of banks using blockchain to clear and settle transactions (an idea recently piloted by the Bank of Canada). In this system, blockchain algorithms are used to store and exchange data in a secure, decentralized manner, but the banks remain in control and manage the whole network according to their contract. New members would have to sign the contract in order to join.⁶

Permissioned systems can be more easily controlled and more efficiently maintained, but may lack the security of a truly decentralized system and thus may be more susceptible to manipulation. (*Id.*)

⁴ See *Bitcoin Mining Now Consuming More Electricity Than 159 Countries, Including Ireland & Most Countries In Africa* Power Compare <https://powercompare.co.uk/bitcoin> (as of Mar. 28, 2021).

⁵ Wilson, *Blockchain: Almost Everything You Read is Wrong* (May 3, 2016) Constellation Research <https://www.constellationr.com/blog-news/blockchain-almost-everything-you-read-wrong> (as of Mar. 28, 2021).

⁶ Oliver, *There is No Such Thing as ‘The’ Blockchain*, *Slate* www.slate.com/articles/technology/future_tense/2018/01/there_is_no_such_thing_as_the_blockchain.html (as of Mar. 28, 2021).

Possible applications of blockchain technology include “online voting, medical records, insurance policies, property and real estate records, copyrights and licenses, and supply chain tracking. They can also include smart contracts, where payouts between the contracted parties are embedded in the block-chain and automatically execute when contractual conditions have been met.”⁷

A recent phenomenon in the world of blockchain is the rise of “nonfungible tokens” (NFTs), which are unique digital assets, such as videos, art, music, or other creative works, that are maintained on a blockchain. NFTs have been compared to digital versions of trading cards, autographed photos, and works of art. Their popularity has prompted frenzied speculation and bidding wars. An NFT video of a LeBron James slam dunk sold for over \$200,000; Twitter CEO Jack Dorsey sold an NFT of his first tweet for over \$2.9 million; a digital artist known as Beeple sold a collaged image file for \$69 million after a two-week Christie’s auction;⁸ and an animated meme of a pixilated flying cat with a Pop-Tart torso emitting a rainbow contrail sold for nearly \$600,000.⁹ NFT hysteria reached a level of self-parody when a *New York Times* columnist turned his article on NFTs into an actual NFT and auctioned it off for over half a million dollars.¹⁰

2. Changes the definition of “blockchain”

SB 838 defined “blockchain technology” as a mathematically secured, chronological, and decentralized consensus ledger or database. AB 2658 (Calderon, Ch. 875, Stats. 2018) established a Blockchain Working Group to evaluate the uses of blockchain by California’s businesses and state government. The Working Group developed the following definition:

“Blockchain” is a domain of technology used to build decentralized systems that increase the verifiability of data shared among a group of participants that may not necessarily have a pre-existing trust relationship.

Any such system must include one or more “distributed ledgers,” specialized

⁷ National Conference of State Legislatures, *LegisBrief, How Blockchain Works* (Nov. 2017) at 2 http://www.ncsl.org/documents/legisbriefs/2017/lb_2544.pdf (as of Mar. 28, 2020).

⁸ Nguyen, Terry, *NFTs, the digital bits of anything that sell for millions of dollars, explained* (Mar. 11, 2021) <https://www.vox.com/the-goods/22313936/non-fungible-tokens-crypto-explained> (as of Apr. 11, 2021).

⁹ *Would you pay US\$590,000 for a meme? Nyan Cat just sold for six figures worth of cryptocurrency, opening the door to even more expensive online NFT art sales* (Feb. 26, 2021) <https://www.scmp.com/magazines/style/tech-design/article/3123302/would-you-pay-us590000-meme-nyan-cat-just-sold-six> (as of Apr. 7, 2021).

¹⁰ Roose, Kevin, *Buy This Column on the Blockchain: Why can't a journalist join the NFT party, too* (Mar. 24, 2021) *New York Times*, <https://www.nytimes.com/2021/03/24/technology/nft-column-blockchain.html> (as of Apr. 2, 2021); *The New York Times Auctioned an Article as an NFT for more than \$500,000* (Mar. 26, 2021) <https://www.entrepreneur.com/article/368017> (as of Apr. 2, 2021).

datastores that provide a mathematically verifiable ordering of transactions recorded in the datastore. It may also include “smart contracts” that allow participants to automate pre-agreed business processes. These smart contracts are implemented by embedding software in transactions recorded in the datastore.¹¹

The bill would also revise the definition of “blockchain technology” to mean a decentralized data system, in which the data stored is mathematically verifiable, that uses distributed ledgers or databases to store specialized data in the permanent order of transactions recorded.

Writing in support of the bill, the Blockchain Advocacy Coalition writes:

Using blockchain technology to record the issuance or transfer of stock provides California based corporations with a secure, transparent option. Companies like ikioo Technologies specifically mentioned SB 838 as the reason why they used blockchain to record stock issuance, and extending this past 2022 provides continuity for California’s business community.

Importantly, this bill also keeps a definition of blockchain in California’s code. According to a Morgan Stanley report, regulatory clarity is the most important factor in where a cryptocurrency company chooses to headquarter. Providing basic definitions in law is the first step towards creating a regulatory framework that adequately addresses the complexity of these new technologies. Our state will struggle to move forward with moving meaningful legislation for any associated technology without first confirming a definition of blockchain.

3. How can corporations use blockchain to record stock transactions?

An article in Harvard Business Review offers some insight on how blockchain could help facilitate recording data associated with stock transactions. The article states:

Consider how business works now. Keeping ongoing records of transactions is a core function of any business. Those records track past actions and performance and guide planning for the future. They provide a view not only of how the organization works internally but also of the organization’s outside relationships. Every organization keeps its own records, and they’re private. Many organizations have no master ledger of all their activities; instead records are distributed across internal units and functions. The problem is, reconciling transactions across individual and private ledgers takes a lot of time and is prone to error.

¹¹ *Blockchain in California: A Roadmap* (July 1, 2020) at 3 <https://www.govops.ca.gov/wp-content/uploads/sites/11/2020/07/BWG-Final-Report-2020-July1.pdf> (as of Mar. 28, 2021).

For example, a typical stock transaction can be executed within microseconds, often without human intervention. However, the settlement – the ownership transfer of the stock – can take as long as a week. That’s because the parties have no access to each other’s ledgers and can’t automatically verify that the assets are in fact owned and can be transferred. Instead a series of intermediaries act as guarantors of assets as the record of the transaction traverses organizations and the ledgers are individually updated.

In a blockchain system, the ledger is replicated in a large number of identical databases, each hosted and maintained by an interested party. When changes are entered in one copy, all the other copies are simultaneously updated. So as transactions occur, records of the value and assets exchanged are permanently entered in all ledgers. There is no need for third-party intermediaries to verify or transfer ownership. If a stock transaction took place on a blockchain-based system, it would be settled within seconds, securely and verifiably.¹²

It is not clear whether corporations are using blockchain for these purposes, as envisioned in SB 838.

4. Extends the authority of corporations to use blockchain to record stock transactions

SB 838 authorized, until January 1, 2022, a corporation or a social purpose corporation that does not have outstanding securities listed on specified securities exchanges to adopt provisions within its articles of incorporation authorizing records administered by or on behalf of the corporation in which the names of all of the corporation’s stockholders of record, the address and number of shares registered in the name of each of those stockholders, and all issuances and transfers of stock of the corporation to be recorded and kept on or by means of blockchain technology, as specified.

This bill would extend these provisions until January 1, 2027. The author writes:

In 2018, California became one of the first states to permit corporations to issue and transfer share certificates through blockchain technology or distributed electronic network. This authorization allowed the state to better protect its consumers and corporations from cases of fraud or theft. SB 638 removes a 2022 sunset to allow California to continue innovating and efficiently doing business in the world’s tech hub.

¹² Iansti & Lakhani, *The Truth About Blockchain* (Jan-Feb. 2017) Harvard Business Review <https://hbr.org/2017/01/the-truth-about-blockchain> (as of Mar. 28, 2021).

5. Privacy protections

When this Committee analyzed SB 838, the California Consumer Privacy Act of 2018 (CCPA) had not yet been introduced. (*See* AB 375 (Chau), as amended June 21, 2018; Ch. 55, Stats. 2018.) The CCPA grants consumers certain rights with regard to their personal information, including enhanced notice and disclosure of information collection and uses; the right to access the information; the right to delete it; the right to restrict the sale of information; and protection from discrimination for exercising these rights. It places attendant obligations on businesses to respect those rights. (Civ. Code § 1798.100 et seq.) Just last year, the voters of California enacted a revamp of the CCPA, the California Privacy Rights Act of 2020, which will take full effect starting in 2023.

Because a blockchain is immutable and may be shared among multiple nodes controlled by separate entities, concerns have been raised as to blockchain's compatibility with the right to delete and opt out of the sharing of one's personal information. The Working Group acknowledged these potential concerns, stating "personal data, once written into a blockchain, remains there permanently."¹³ The Working Group suggested several work-arounds. For instance, the link between a person and their data can be broken by using a public key in lieu of their data, which may be stored elsewhere. Alternatively, it may be possible to hash or encrypt the data rather than deleting it.¹⁴

To eliminate any such concerns, the author recently amended the bill to clarify that its provisions do not alter or affect a corporation's obligations to comply with applicable privacy laws.

SUPPORT

Blockchain Advocacy Coalition

OPPOSITION

None known

RELATED LEGISLATION

Pending Legislation: SB 689 (Hertzberg, 2021) clarifies the definition of blockchain technology and authorizes the State Registrar, local registrar, or county recorder to electronically distribute certified copies of birth, death, and marriage certificates by way of blockchain technology. This bill is pending before the Senate Health Committee.

Prior Legislation: *See* Comments 3 and 4.

¹³ *Id.* at 49.

¹⁴ *Id.*

PRIOR VOTES:

Senate Banking and Financial Institutions Committee (Ayes 9, Noes 0)
