



Virtual Currency and Blockchain Technology

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Rising use and acceptance of virtual currencies and the technology that underpins them are increasingly presenting unique issues for state lawmakers and regulators. This *issue brief* describes virtual currencies such as bitcoin, discusses blockchain technology, and describes recent state legislation on these topics.

Virtual Currency

Virtual currency, or cryptocurrency, is an electronic asset that, like a traditional currency, is used as a medium of trade or exchange. Virtual currency exists only in digital form, and is not fundamentally backed by another commodity, such as gold, or by an issuing government (fiat currency). Exchanges of virtual currency are made in a peer-to-peer network, without oversight or tracking by a third-party or government agency.

Bitcoin. The most well-known virtual currency, bitcoin, emerged in 2009. Like traditional currencies, bitcoin can be traded, saved, and exchanged for goods and services. As of the writing of this issue brief, the value of one bitcoin is approximately \$7,200, but its value can fluctuate widely. The total value of all existing bitcoins currently exceeds \$134 billion, with millions of dollars worth of bitcoins exchanged daily. Although bitcoin is the most widely known virtual currency, other virtual currencies exist.

Blockchain Technology

Bitcoin and other virtual currencies are fundamentally made possible by a technology

called blockchain. Because bitcoin and other virtual currencies are not controlled by a central bank or government authority, there is no central agency monitoring and recording transactions. Instead, virtual currencies rely on a distributed ledger that is shared by participants in the network who record and verify transactions.

Distributed ledger. Consider a simple transaction between friends. Peer 1 wants to give Peer 2 an apple. The transaction occurs without a third party monitoring and verifying that Peer 1 gave Peer 2 the apple. Both Peer 1 and Peer 2 agree that the transaction occurred, and the transaction is “verified” by virtue of this agreement, rather than a third-party, such as a bank, credit card company, or government agency.

A distributed ledger is the same concept, on a larger scale. In the blockchain, all transactions are recorded on a virtual ledger, which is distributed to users on the network. When a transaction is requested, users on the network attempt to verify it. If a user fails to verify the transaction, it cannot be entered into the ledger, and the transaction cannot go through. In this way, transactions are authorized or denied by the network as a whole. Once the transaction is verified, it is added as a “block” of information in the ledger, and becomes part of the blockchain. The updated blockchain is then digitally synchronized across all users so that the blockchain remains accurate.

Cryptography. Information in the blockchain is secured and recorded through cryptography. Each user has two “keys:” private and public. A private key is kept secret like a password, is only known to

the user, and cannot be reissued or recovered if lost. Public keys are freely shared. Together, the keys allow users to send information to the blockchain, verify its accuracy, and record it. Because the information in the blockchain is shared by a network of users rather than a single entity, and through the use of cryptography, blockchain technology is potentially less vulnerable to cyberattacks than traditional information storage methods.

Beyond virtual currency. Although blockchain technology was originally developed to allow the exchange of virtual currency, its application is potentially wider and could include transactions involving data of any kind, such as health records, contracts and legal documents, or inventory tracking. For instance, through the Enterprise Ethereum Alliance, various companies are working together to develop business-related applications for blockchain technology on the platform developed by the blockchain network Ethereum.

Tokens and Mining

In the bitcoin system, users who help maintain the distributed ledger and verify transactions can earn bitcoins. This work, called mining, creates an incentive for users to help support and maintain the blockchain. Virtual currencies, as well as other entities that are exploring the use of blockchain for other uses, may issue “tokens” or other digital assets for participation in or support of the network backing the activity.

State Legislation

Increasingly, states are considering legislation related to virtual currency and the underlying blockchain technology. In some states, such legislation is regulatory and framed with the goal of promoting consumer protection and reducing potentially fraudulent and unlawful activity such as money laundering. Alternatively, other states

are considering approaches with the goal of promoting innovation in the virtual currency and blockchain arenas, and attracting businesses to the state.

Legislation regarding virtual currency. In 2015, New York enacted a comprehensive licensing program for virtual currencies. The law requires virtual currency transmitters, exchanges, and other services to obtain a “BitLicense” to operate in New York state.

A central issue for states is whether virtual currency dealers and exchanges should be regulated as money transmitters. At least five states have passed legislation regulating virtual currency dealers under money transmission laws, while other states have specifically exempted virtual currency from such laws.

Other issues considered by states include the taxation of virtual currency and tokens, whether virtual currency and tokens should be regulated in a manner similar to securities, whether virtual currency should be accepted to conduct state business, such as paying taxes, and the inclusion of virtual currency under state money laundering and unclaimed property laws.

Blockchain technology. States are considering a variety of issues related to the use of blockchain technology. Legislation passed in Delaware and Wyoming allows corporations to maintain corporate records using blockchain technology. Tennessee recognizes the legal authority to use blockchain technology and smart contracts (contracts that are executed based on parameters set and agreed to in a distributed ledger). Colorado is currently considering Senate Bill 18086 requiring distributed ledger technology to be examined in relation to cybersecurity for state computer systems.

Several states have established or are considering studies or task forces to examine blockchain technology and larger issues presented by virtual currencies.