Colorado and Digital Voting: Analysis of House Bill 1170

Sundar, Ramamurthy
University of the Cumberlands
BLCN 636 - Legal and Regulatory Framework of Blockchain
Senator Wil Schroder
June 28, 2023

Colorado and Digital Voting: Analysis of House Bill 1170

As of 2023, the state government of Colorado has been involved with passing a number of landmark bills to help promote the research of blockchain technology. Since 2017, the government of Colorado has been a trailblazer by funding a number of feasibility studies assessing blockchain's ability to improve efficiencies and reduce costs in quite a few use-cases. Some examples of feasibility projects that got funding includes the exploration of precision agriculture and the issuance of security tokens. Something these feasibility studies note, however, is that the technology itself is still in its infancy. Many of these feasibility studies, even from the state of Colorado itself, discover the immense cost associated with researching and developing blockchains that efficiently deliver on the promises they make. This paper will analyze a recent bill that has not yet passed and is struggling to get momentum from the government of Colorado. In yet another landmark bill, the state of Colorado had a bill proposed to establish the requirements for the creation and use for distributed ledgers to help manage votes digitally during state elections (CO 2023 HB 1170). As stated previously, this bill did not yet pass and looks to be paused indefinitely. This paper utilizes the 8-fold path to assess house bill 1170. It will discuss why this bill is struggling to gain the momentum it needs to pass, provide alternatives that the state of Colorado might do to get a policy or product like described in bill 1170 off the ground, as well as provide some insights into what the future might hold.

Problems:

Voting is an incredibly important part of the democratic process. The act of voting itself, however, can be an expensive and time-consuming task for both citizens and the government to engage in and manage. Due to security concerns, it is inadvisable to perform digital voting through the client-server model, especially for government elections. The risk of corruption and server-centralization as well as the inability to differentiate between a valid transaction and its copy makes it difficult to securely create voting applications with such a server model. This is where technologies like blockchain can help, however. By issuing tokens from a verified government account directly to voters, the state of Colorado could greatly improve their own voting process. These voting tokens are uniquely created during a specific time that can be audited by the public through decentralized server architectures.

Despite the possibilities, house bill 1170 was unable to initially pass and is currently indefinitely paused. The bill itself is actually quite detailed and tries to describe the specific procedures that would be involved with managing a blockchain-based voting machine, though the bill does not go into the details of how one would directly go about developing such a voting application. The main problem with this bill is that while there are specific procedures described for how the state government would work as a type of end-user who leverages a voting system blockchain, the bill never goes on to describe how the blockchain application nor trust protocol itself ought to be developed.

Moving onto summarizing the bill itself, both in-person and by-mail voting procedures from the perspective of an elector are described. In particular, the bill spends a lot of time

described an election integrity protocol to provide a secure procedure for the issuance of voting tokens both in-person and by-mail. Some of the later sections describe some other important protocols for a voting procedure. Section 1-7-1105 describes the election integrity protocol for counting ballots and section 1-7-1106 goes on to describe how vote dissemination will occur. In total, this bill describes the procedures for government workers to issue tokens to an elector, how the government office will go about aggregating the votes, as well as how the aggregated data would be visible to the public. While these procedures and information disclosures are fairly in-depth and show a solid understanding of blockchain technology from the representative Mr. DeGraaf's part, this bill has been proposed far too early to be viable. The state of Colorado will first need to improve market conditions for entrepreneurs to more easily start compliant blockchain businesses within the state. The paper proposes that only by improving product innovation and getting the blockchain development space booming in Colorado's private sector can the state of Colorado be able to implement operational procedures for a blockchain-based voting system.

Evidence:

Confidence in the blockchain markets may still be high, but many companies that were previously seen as big players in the space have been brought to their knees. As of 2023, the SEC has come after a number of large crypto exchanges, like Coinbase and Binance (U.S Securities and Exchange Commission, 2023). There is also a long list of complaints by the SEC against a number of startups that have also tried to make way in this space. Since it is clear that governments and companies, both big and small, are trying to understand this technology and make profits off of it, it may become more important than ever for private businesses, governments, and regulatory bodies to work together. Private business owners need to feel like they can innovate and push the technology forward, while regulators should be able to keep markets in check and ensure private enterprises are being compliant with the relevant rules.

While private companies may be trying to take a stab at building blockchain products, many of the products in development today simply do not function well and will need more innovation before end-users like governments can begin to use the blockchain. Dai and Vasarhelyi (2017) describe the challenges of building a blockchain-based accounting and auditing system, which is essentially what a voting system is. The concept of triple-entry accounting, where financial transactions are stored with a third entry which is a hash, only has been known to work well in the Bitcoin blockchain ecosystem. Triple-entry accounting essentially allows you to have a audit trail business-to-business. In the voting application's example, this would mean multiple voting offices in multiple jurisdictions could be able to easily have their voting data related to one another within the network. The problem is, however, that triple-entry accounting has not been used for much more than the Bitcoin blockchain. Other accounting data that would exist in an Enterprise Resource Planning (ERP) system have not been properly leveraged with triple-entry accounting. Therefore, a big part of bill 1170 that discusses aggregation and dissemination of information could actually be fairly challenging to implement if the bill were passed as of now. While real-time audit and assurance would be a great move for improving operational efficiency, it is still a long ways away.

It is also worth mentioning a feasibility study published in partnership with the Colorado Department of the Treasury. In a previous bill that was passed, the state of Colorado wanted to fund a feasibility study to assess the viability of the department to issue security tokens to manage state financing obligations (CO 2022 SB 25). This bill was passed, and there was a study published the following year assessing whether the state of Colorado would be able to leverage such security tokens. Boehm & Keen (2023) describe that issuing security tokens would be highly beneficial for the state of Colorado, but the research and development costs could be enormous. While security tokens could be clearly seen to potentially increase investor demand for state financing initiatives, reduce the state's transaction costs by addressing market inefficiencies, and more easily allow investors to be involved with state financing initiatives, the two researchers also concluded that it would help the state of Colorado for more in the long-term than the short-term. Since the technology is still so much in its infancy, the development costs are largely unknown and it could actually be outside the budget of the state. While the future looks bright, it would be unadvisable for the state to think this is coming any time soon, let alone themselves. The short term costs are simply too high.

Alternatives:

I would like to make it clear that I think house bill 1170 is actually a fairly decent bill by itself. It describes some basic terminology that very few people would disagree with regarding blockchain and voting systems, but as stated previously, it just isn't the time for the state of Colorado to pass something like this. This is because the implementation details of the corresponding blockchain product are not out yet, so making minor changes to the bill isn't going to make much of a difference. Since the nature of the bill is mostly in describing procedural tasks like the kinds of information that will be exchanged, who will be in charge of issuing tokens, and how aggregations will take place, these details could change a little depending on the implementation details of the corresponding blockchain application.

It would better be in the state's interest to pass laws that make it easier for private companies to operate within the state of Colorado and provide consulting services for the state. There are two previously passed bills that help shed some light on how to proceed. Firstly, the United States Commercial Code has added a new amendment, article 12, the protects an asset called the Controllable Electronic Record (CER) (U.C.C 2022 art. 12). These assets are basically any kind of digital asset wherein the owner is allowed to transfer ownership and the associated rights to another individual/entity. This landmark bill was adopted by the state of Colorado in its entirety, which will help protect the rights of consumers within the state. While this bill is nice for protecting consumers, there is a more relevant bill to this situation that I would like to point out. The state of Wyoming has gone ahead and passed a bill that allows Decentralized Autonomous Organization (DAOs) to file as Limited Liability Corporations (LLCs) within the state (WY 2021 SB 38). This bill helps prevent fraud in blockchain markets by forcing the state to know the founders/executives involved with a particular DAO, as well as protects the executives and founders from liability. Since DAOs are currently viewed as joint ventures in most states, where liability is not limited, everyone involved with a particular DAO could be held liable for any illegal actions that the DAO is involved with. As one alternative, the state of

Colorado could follow in Wyoming's footsteps and create pathways for founders to sign their organization up as an LLC.

The state of Colorado does not have to exactly follow in Wyoming's footsteps, however. There could be another kind of similar organization that fits better with the state's own regulatory regime. The Limited Cooperative Association (LCA), could prove to be a more attractive option within the state of Colorado to enable DAO formation within the state (Radebaugh & Muchnik, 2021). The LCA is a mix between an LLC and a corporation. It also fits much better with the principles of blockchain, as voting system, decentralization, and non-hierarchical models of governance are innate aspects of these kinds of corporations. Specifically, the state would benefit from a business operating as a multi-stakeholder cooperative, where the company could have their own private clients as well as special roles for people like government officials. This type of cooperative is quite a new kind of business model, as multiple types of entities could transact on the same application in harmony, if designed correctly.

Criteria Selection:

The biggest reasons for proposing that the state turn to promoting LCAs to try and take on the voting innovation initiatives is mostly because of development costs, development time, and the general unknown political feasibility for such transaction systems. With no actual plans for the state to develop such voting systems, the state has already proposed a procedure for applying blockchain-based voting systems into the traditional voting procedure. Since the development of such a technology is still far away, with Ethereum, the leading blockchain database, still struggling to handle the a number of issues involved with the technology, it is still unknown when such a system would be available for the state of Colorado to use. Because only long term gains are clearly visible from this technology, it would be better for the state to offset the costs associated with research and development by getting private businesses involved. These private businesses, however, need to govern themselves in a way that has not exactly been done much around the country. The risks associated with such a cutting edge voting methodology must also be closely monitored for quite some time, as disrupting the existing voting procedure entirely in-house could go wrong in a number of ways.

Outcomes:

Since bill 1170 is quite ahead of its time and still a decent bill with a lot of good groundwork already in place, it could very well be adopted at a later date, with some potential amendments. It is important to note, however, that relying on the private market to cooperate and contribute to the state's infrastructure is no easy task. Whether as an LLC or an LCA, the companies involved need to work closely with the state in order for effective infrastructure to be developed.

It will be necessary to potentially police the private companies involved, as there have been a number of fraud cases reported by the SEC regarding various blockchain companies. If the DAO in question were to form as an LLC, then it would operate more like a traditional company that has the freedom to operate however they want, aside from some initial obligations

defined during sign-up. Enabling blockchain companies to form as LLCs within the state could cause a boom for Colorado's blockchain market. However, this could make it difficult for the government of Colorado to directly work with the company, as they would not be legally obligated to do so. The freedom of the owner(s) to run the company however they want to could come into conflict with the state government. This could increase enforcement costs and generally ruin innovation for the voting application. While the state would not need to directly fund initiatives as much, there could be other costs like enforcement that end up hurting more than helping.

An LCA, on the other hand, especially running as an multi-stakeholder cooperative, would be obliged to work with the state of Colorado. This could greatly help reduce enforcement costs and help mitigate fraud. It also allows for the company to exercise private financing options that could help reduce the stresses of the state. While both LLCs and LCAs have the ability to provide innovations within a private market, the LCA will likely lead to outcomes that are better for the development of a state-level voting protocol. The LLC could be more

Trade-offs:

While it is true that allowing other sources of capital to fund the private businesses could help reduce costs for the state of Colorado, enforcement of regulations on the companies could become fairly expensive. The enforcement costs could end up overtaking R&D costs if measures are not in place to keep private companies in check. The issue with LLCs is that is provides too many protections for business owners, while allowing for little room for the government to be directly involved with business operations. LCAs could also have this problem if they are not founded as multi-stakeholder cooperatives.

Final Decision:

The state government of Colorado has not expressed any keen interest in this bill to actually develop the blockchain application that would enable the voting procedures that Mr. DeGraaf has proposed. Since there is no real timeline in sight for such an initiative to take place, it would simply be best to turn to the private market to try and provide a helping hand in such an initiative. Private companies also have the potential for committing fraud, so allowing DAOs to found as LCAs, particularly as multi-stakeholder cooperatives, could help keep enforcement costs down low, improve cooperation between the state government, company founders, and clients, and eventually make it so that a voting application is actually in working order before the state begins to implement procedures for enabling a more powerful form of voting.

The Story:

The challenges of innovating in the blockchain space are two-fold - fraudulent business practices and the immense business costs of R&D. Audit and assurance through blockchain is still in its infancy, as triple-entry bookkeeping procedures for transactions that would actually be stored in a typical ERP system are not even in place right now. Aggregating and disseminating votes are still not a tried and tested practice on blockchain systems, so more feasibility studies

need to be done before Colorado can move forward. It is through the business entity known as the LCA, which the state of Colorado already has, that Colorado might be able to implement a formal blockchain-based voting procedure within the state. By allowing these LCA-based DAOs to operate within the state, the state can work closely with private enterprises, keep enforcement costs down, and eventually make it so that house bill 1170 actually can get passed.

Reference of Bills In This Paper

Colorado (2022). *Senate Bill 25.*
Colorado (2023). *House Bill 1170.*
Wyoming (2021). *Senate Bill 38*.
U.C.C art. 12 (amended 2022).

Articles and Other References

Dai, J. & Vasarhelyi, M. A. (2017). Toward blockchain-based accounting and assurance. The Journal of Information Systems, 31(3), 5–21. https://doi.org/10.2308/isys-51804

Radebaugh, J., & Muchnik, Y. (2021, December 16). *Exclusive report: Solving the riddle of the Dao with Colorado's cooperative laws*. The Defiant. https://thedefiant.io/solving-the-riddle-of-the-dao-with-colorados-cooperative-laws

Boehm, J., Keen S. (2023, March 1). *Security token offerings state capital financing feasibility study.* Colorado Department of the Treasury. https://treasury.colorado.gov/sites/treasury/files/FINAL%20Security%20Token%20Offerings%20State%20Capital%20Financing%20Feasibility%20Study%20.pdf

U.S Securities and Exchange Commission. (2023, June 5). *SEC Files 13 Charges Against Binance Entities and Founder Changpeng Zhao*. Press release. *https://www.sec.gov/news/press-release/2023-101*

U.S Securities and Exchange Commission. (2023, June 6). *SEC Charges Coinbase for Operating as an Unregistered Securities Exchange, Broker, and Clearing Agency*. Press Release. *https://www.sec.gov/news/press-release/2023-102*